IEI Technology Corp.

MODEL:

KINO-HM551

Mini-ITX SBC Supports Socket G1 for Intel® mobile Core™ i7/i5/i3 and Intel® Celeron®, VGA/DVI/LVDS/HDMI Display, Dual GbE, Eight USB 2.0, Dual PCIe Mini, Four SATA 3Gb/s, Audio, RoHS

User Manual

Rev. 1.02 - 15 February, 2012

RoHS Lead Free

Revision

Date	Version	Changes
15 February, 2012	1.02	Updated Table 3-6: Fan Connector Pinouts
15 September, 2011	1.01	Modified Chapter 3 Connectors
17 November, 2011	1.00	Initial release

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Chapter

1

Introduction

1.1 Introduction

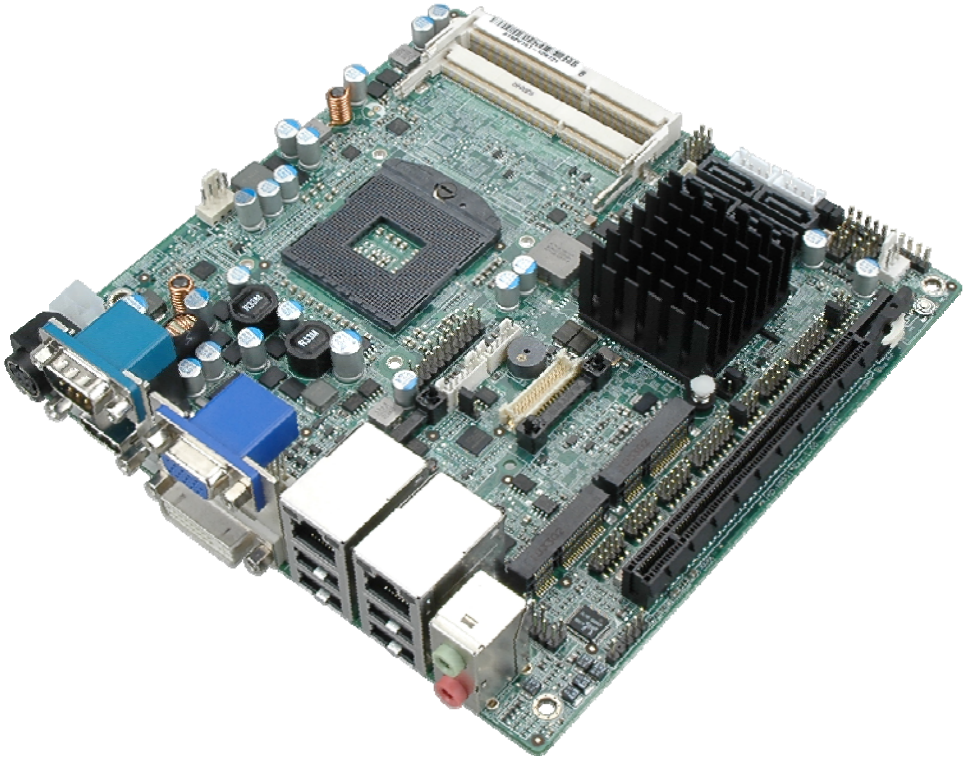


Figure 1-1: KINO-HM551

The KINO-HM551 motherboard is a Socket G1 32nm Intel® Core™ i3, i5 and i7 processor platform. One 4.0 GB 800 MHz or 1066 MHz DDR3 SDRAM SO-DIMM is supported by the KINO-HM551.

The integrated Intel® HM55 Express Chipset supports two GbE LAN ports through dual Realtek RTL8111E Ethernet controllers (ASF 2.0 support on LAN1). The KINO-HM551 also supports four SATA 3Gb/s drives and provides 5 V SATA power.

The KINO-HM551 supports dual display via VGA, HDMI and an internal LVDS connector. Eight USB 2.0 channels and two PCIe Mini expansion sockets provide flexible expansion options. High Definition Audio (HDA) support ensures HDA devices can be easily implemented on the KINO-HM551. Serial device connectivity is provided by three internal RS-232, one external RS-232, and two internal RS-232/422/485 connectors.

1.2 Connectors

The connectors on the KINO-HM551 are shown in the figure below.

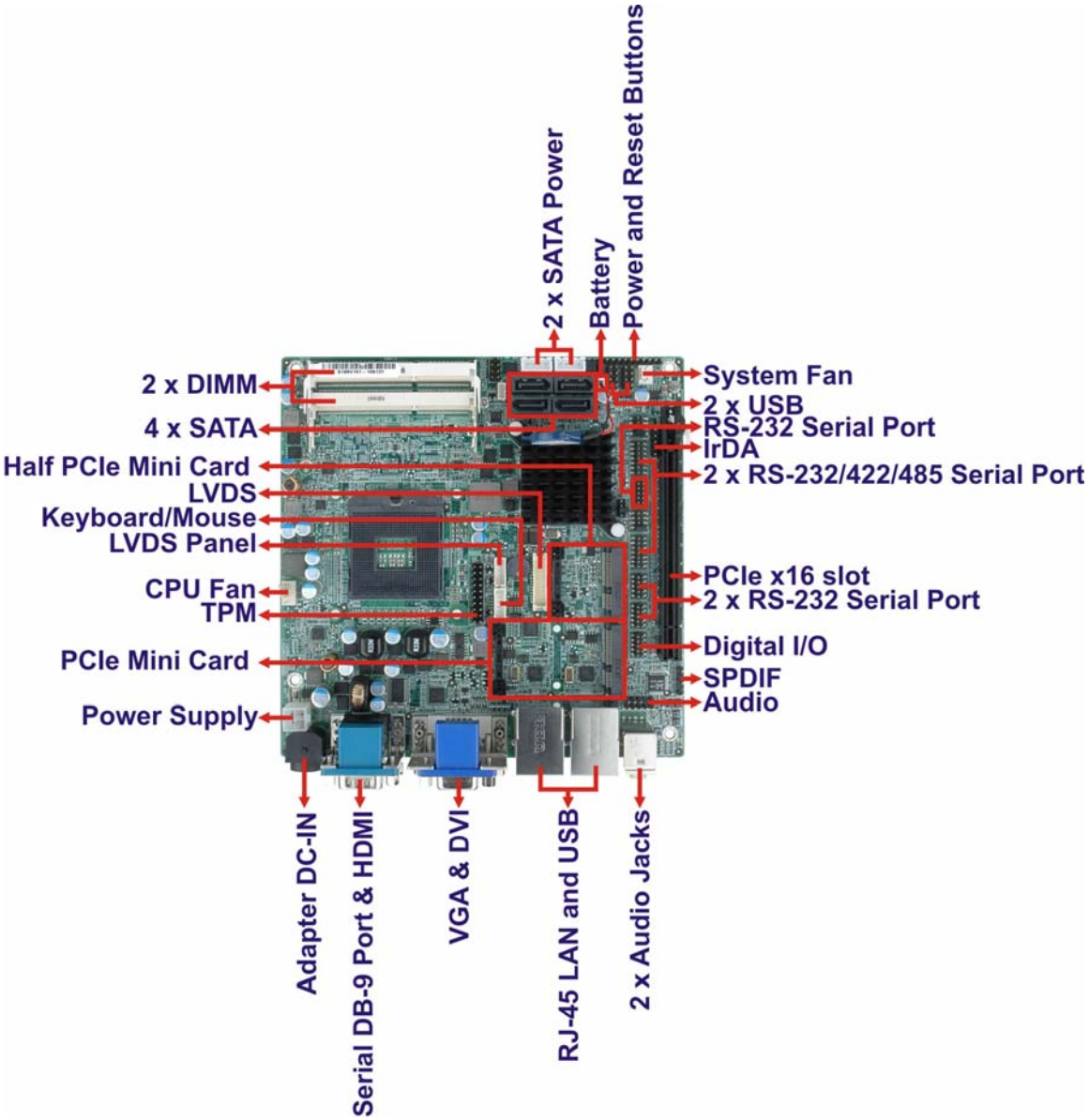


Figure 1-2: Connectors

1.3 Dimensions

The dimensions of the board are listed below:

- **Length**: 170 mm
- **Width**: 170 mm

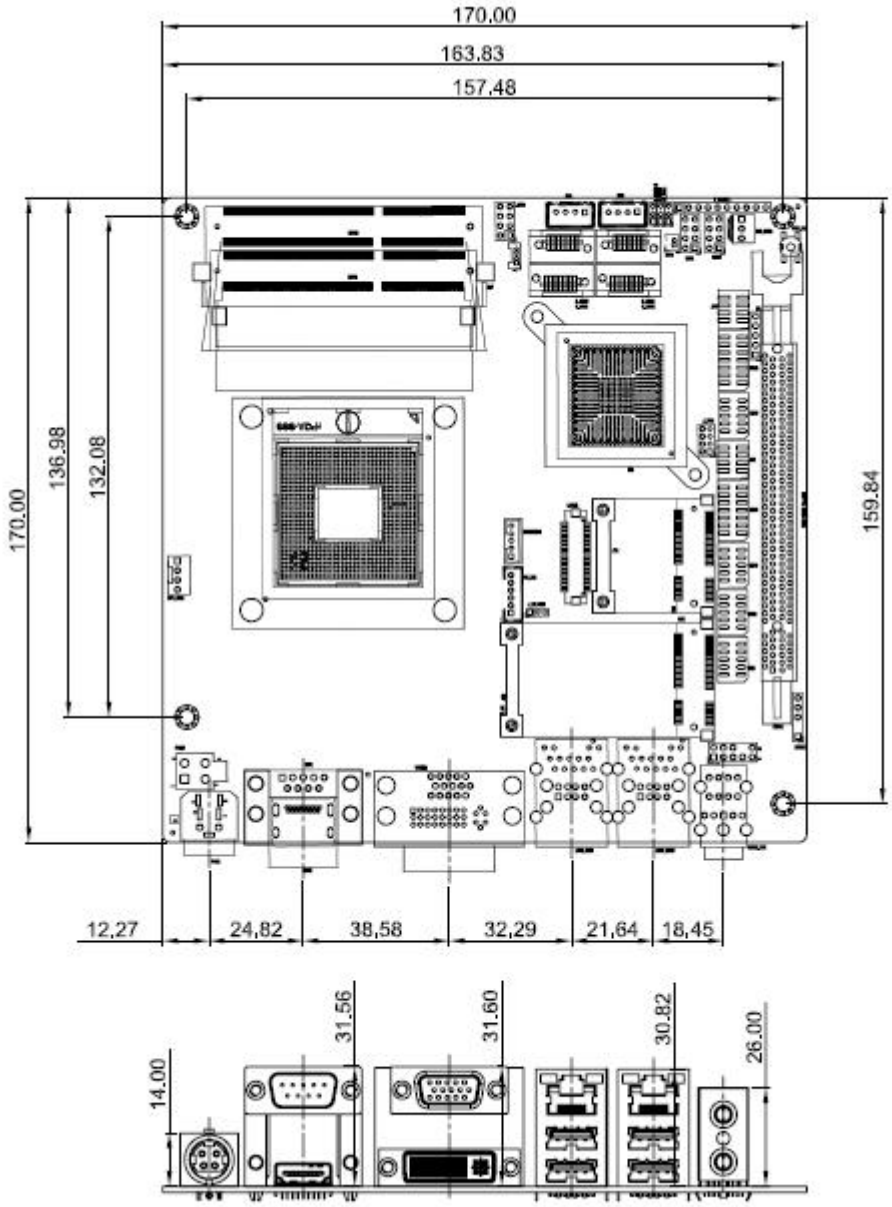


Figure 1-3: KINO-HM551 Dimensions (mm)

1.4 Data Flow

Figure 1-4 shows the data flow between the two on-board chipsets and other components installed on the motherboard and described in the following sections of this chapter.

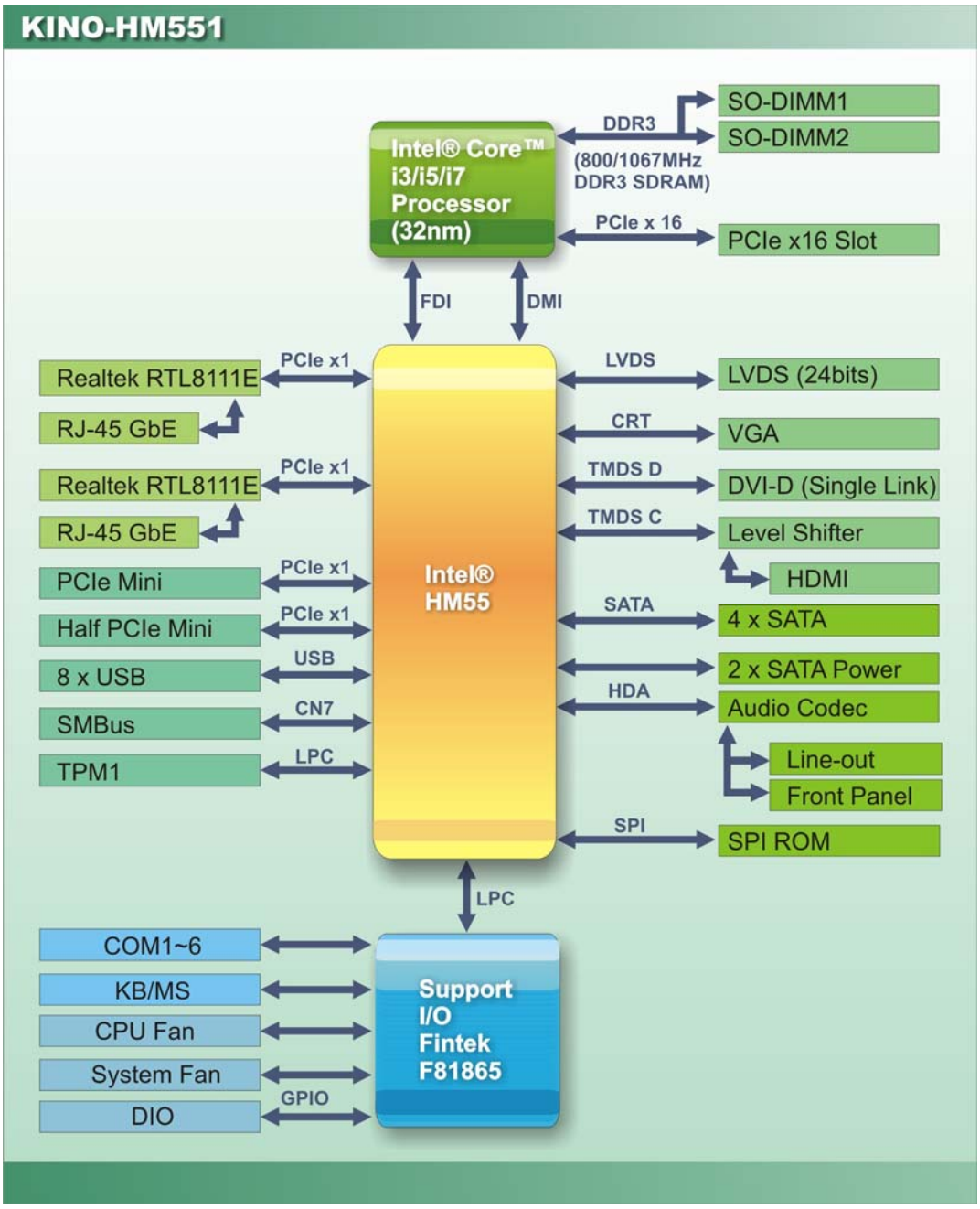


Figure 1-4: Data Flow Block Diagram

1.5 Technical Specifications

KINO-HM551 technical specifications are listed in table below.

Specification	KINO-HM551
Form Factor	Mini-ITX
Socket	Socket G1 (rPGA989) Socket 988A
CPU Supported	32 nm Intel® Core™ i3 processor 32 nm Intel® Core™ i5 processor 32 nm Intel® Core™ i7 processor (i7 processors without integrated graphics) Intel® Celeron® processor
Express Chipset	Intel® HM55
Memory	Two 204-pin SO-DIMM sockets support 800/1066 MHz 4.0 GB (max.) dual-channel DDR3 SDRAM SO-DIMM (system max. 8GB)
Audio	Realtek ALC888 HD 7.1 channel audio codec
LAN	Dual Realtek RTL8111E PCIe GbE controllers with ASF 2.0 support on LAN1
Super I/O	Fintek F81865
BIOS	AMI uEFI BIOS label
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Expansion	
PCIe	Two PCIe Mini slot
I/O Interface Connectors	
Audio Connector	One internal audio connector (10-pin header)

Specification	KINO-HM551
Display Ports	One VGA port (2048x1536) One HDMI port (up to 1080p) One internal LVDS connector (1600x1200) One DVI-D port (1600x1200)
Ethernet	Two RJ-45 GbE ports
Serial Ports	Three RS-232 via three 10-pin headers One external RS-232 serial connector via DB-9 male Two RS-232/422/485 via 14–pin header
USB 2.0/1.1 Ports	Four external USB ports Four internal USB ports via two 8-pin headers
Storage	
Serial ATA	Four SATA 3.0 Gb/s connectors Two 5 V SATA power connectors
Environmental and Power Specifications	
Power Supply	12 V DC input only ATX and AT power supported
Power Connector	One external DIN 4-pin DC jack One internal 4-pin Molex power connector for power supply
Power Consumption	12V@4.67A (2.66 GHz Intel® Core™ i7 620M CPU with two 1333 MHz 4 GB DDR3 SO-DIMM)
Operating Temperature	-10ºC ~ 60ºC (requires cooler and silicone heat sink paste)
Humidity	5% ~ 95% (non-condensing)
Physical Specifications	
Dimensions	170 mm x 170 mm
Weight GW/NW	900 g / 450 g

Table 1-1: Technical Specifications

Chapter

2

Unpacking

2.1 Anti-static Precautions

WARNING!

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

Make sure to adhere to the following guidelines:

- ***Wear an anti-static wristband***: Wearing an anti-static wristband can prevent electrostatic discharge.
- ***Self-grounding***: Touch a grounded conductor every few minutes to discharge any excess static buildup.
- ***Use an anti-static pad***: When configuring any circuit board, place it on an anti-static mat.
- ***Only handle the edges of the PCB***: Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

2.2 Unpacking Precautions

When the KINO-HM551 is unpacked, please do the following:

- Follow the antistatic guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.

2.3 Packing List

NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the KINO-HM551 was purchased from or contact an IEI sales representative directly by sending an email to sales@iei.com.tw.

The KINO-HM551 is shipped with the following components:

Quantity	Item and Part Number	Image
1	KINO-HM551 motherboard	
1	Dual RS-232 cable (**P/N**: 19800-000112-RS)	
2	SATA and power cable (**P/N**: 32801-000100-100-RS)	
1	I/O shielding (**P/N**: 45014-0032C0-00-RS)	
1	Mini jumper pack (2.0mm) (**P/N**: 33100-000033-RS)	
1	Utility CD	

1	One Key Recovery CD	
1	Quick Installation Guide	

2.3.1 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
CPU cooler for 55 W mobile processor (**P/N**: CF-989A-RS-R11)	
Dual USB cable (with bracket) (**P/N**: CB-USB02-RS)	
RS-232/422/485 cable (with bracket) (**P/N**: 19800-000110-RS)	
SATA to IDE/CompactFlash® converter board (**P/N**: SAIDE-KIT01-R10)	
Keyboard/Mouse cable (**P/N**: 32000-023800-RS)	
Infineon TPM module (**P/N**: TPM-IN01-R11)	

Chapter

3

Connectors

3.1 Peripheral Interface Connectors

This chapter details all the jumpers and connectors.

3.1.1 KINO-HM551 Layout

The figures below show all the connectors and jumpers.

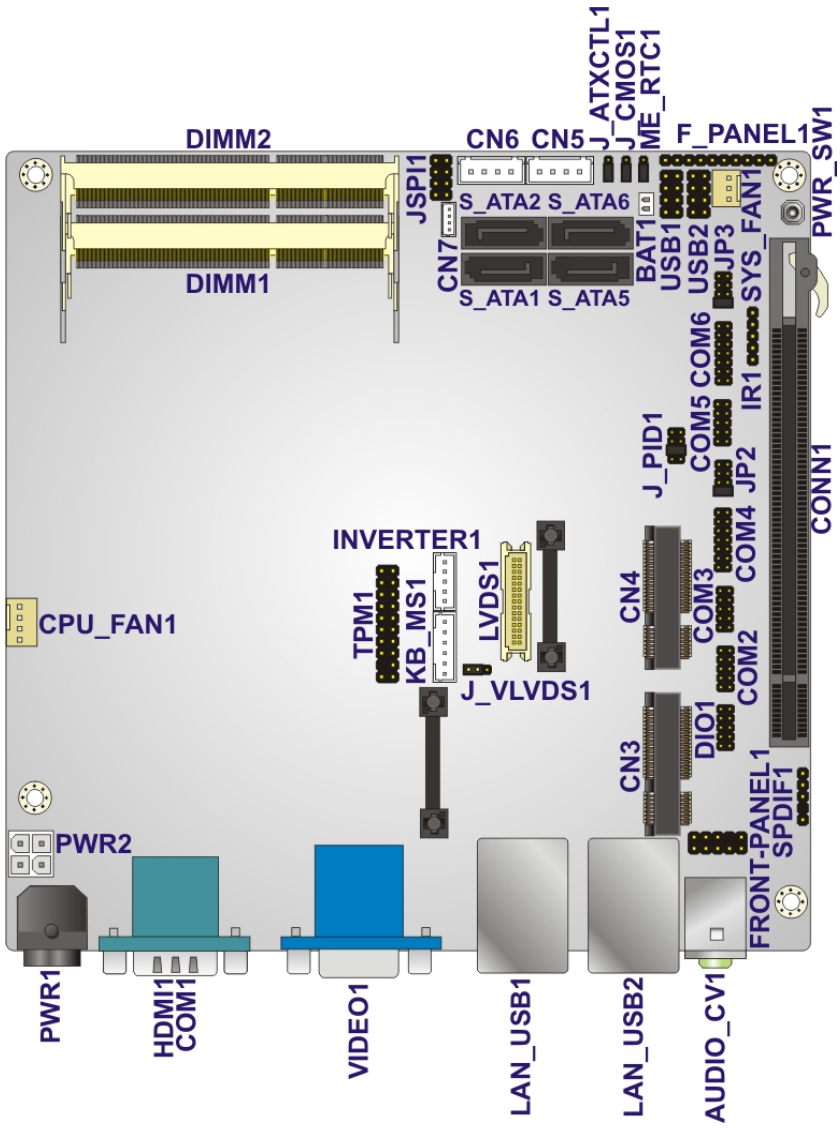


Figure 3-1: Connector and Jumper Locations

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
Audio connector	10-pin header	FRONT-PANEL1
Digital I/O connector	10-pin header	DIO1
Fan connector (CPU)	4-pin wafer	CPU_FAN1
Fan connector (system)	3-pin wafer	SYS_FAN1
Front Panel indicators	10-pin header	F_PANEL1
Half PCIe Mini card slot	PCIe Mini card slot	CN4
Infrared connector	5-pin header	IR1
Inverter connector	5-pin wafer	INVERTER1
Keyboard and mouse connector	6-pin wafer	KB_MS1
LVDS connector	30-pin crimp	LVDS1
PCIe Mini card slot	PCIe Mini card slot	CN3
Power supply connector	4-pin connector	PWR2
RS-232/422/485 serial port connector	14-pin header	COM4, COM6
RS-232 serial port connector	10-pin header	COM2, COM3, COM5
Serial ATA (SATA) drive connector	7-pin SATA	S_ATA1, S_ATA2, S_ATA5, S_ATA6
SATA power connector	4-pin wafer	CN5, CN6
SMBus connector	4-pin wafer	CN7
SPDIF connector	5-pin connector	SPDIF1
TPM connector	20-pin connector	TPM1
USB connectors	8-pin header	USB1, USB2

Table 3-1: Peripheral Interface Connectors

3.1.3 External Interface Panel Connectors

The table below lists the connectors on the external I/O panel.

Connector	Type	Label
Adapter connector	DC-IN	PWR1
Audio connector	2 x Audio jack	AUDIO_CV1
Ethernet and USB connector	RJ-45, USB port	LAN1_USB1, LAN2_USB2
HDMI	HDMI port	HDMI1
Serial Port DB-9 port connector	DB-9 Male	COM1
VGA and DVI connector	15-pin Female, 24-pin Female	VIDEO1

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the KINO-HM551.

3.2.1 Audio Connector

CN Label: **FRONT-PANEL1**

CN Type: 10-pin header (2x5)

CN Location: See **Figure 3-2**

CN Pinouts: See **Table 3-3**

This optional module uses a high quality HDA compatible codec.

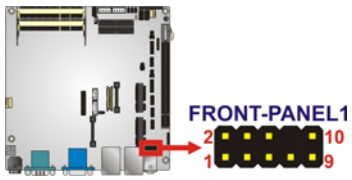


Figure 3-2: Audio Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MIC-L	2	ANALOG GND
3	MIC-R	4	PRESENCE#
5	LINE-R	6	MIC-JD
7	FRONT-10	8	NC
9	LINE-L	10	INE-JD

Table 3-3: Audio Connector Pinouts

3.2.2 Digital I/O Connector

CN Label: **DIO1**

CN Type: 10-pin header (2x5)

CN Location: See **Figure 3-3**

CN Pinouts: See **Table 3-4**

The digital I/O connector provides programmable input and output for external devices. The digital I/O provides 4-bit output and 4-bit input.

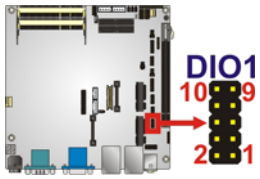


Figure 3-3: Digital I/O Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
7	Input 3	8	Input 2
9	Input 1	10	Input 0

Table 3-4: Digital I/O Connector Pinouts

3.2.3 Fan Connector (CPU)

CN Label: **CPU_FAN1**

CN Type: 4-pin wafer (2x2)

CN Location: See **Figure 3-4**

CN Pinouts: See **Table 3-5**

The fan connector attaches to a cooling fan.

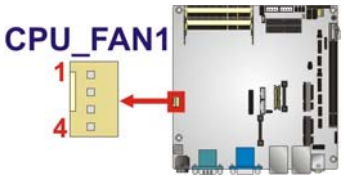


Figure 3-4: Fan Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+12V
3	Rotation Signal	4	PWM Control Signal

Table 3-5: Fan Connector Pinouts

3.2.4 Fan Connector (System)

CN Label: **SYS_FAN1**

CN Type: 3-pin wafer

CN Location: See **Figure 3-5**

CN Pinouts: See **Table 3-6**

The fan connector attaches a cooling fan.

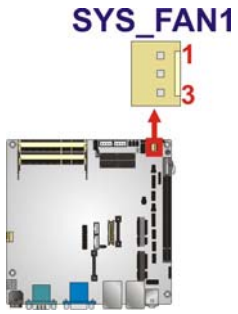


Figure 3-5: Fan Connector Locations

PIN NO.	DESCRIPTION
1	GND
2	+12V
3	Rotation Signal

Table 3-6: Fan Connector Pinouts

3.2.5 Front Panel Indicators

CN Label: **F_PANEL1**

CN Type: 10-pin header

CN Location: See **Figure 3-6**

CN Pinouts: See **Table 3-7**

The power button connector is connected to a power switch on the system chassis.

The reset button connector is connected to a reset switch on the system chassis.

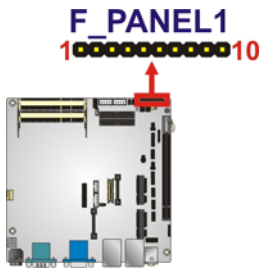


Figure 3-6: Front Panel Indicator Location

FUNCTION	PIN NO.	DESCRIPTION	FUNCTION	PIN NO.	DESCRIPTION
	1	NC	Power LED	6	PWR_LED+
Power Button	2	PWR_BTN+	Indicator	7	PWR_LED+
	3	PWR_BTN-		8	PWR_LED-
HDD LED	4	HDD_LED+	Reset	9	RESET+
Indicator	5	HDD_LED-		10	RESET-

Table 3-7: Front Panel Indicator Pinouts

3.2.6 Half PCIe Mini Card Slot

CN Label: **CN4**

CN Type: PCIe Mini card slot

CN Location: See **Figure 3-7**

CN Pinouts: See **Table 3-8**

The PCIe Mini card slot is for installing PCIe Mini expansion cards.

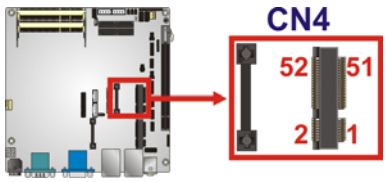


Figure 3-7: Half PCIe Mini Card Slot Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PCIE_WAKE#	2	VCC3
3	N/C	4	GND
5	N/C	6	1.5 V
7	N/C	8	N/C
9	GND	10	N/C
11	CLK-	12	N/C
13	CLK+	14	N/C
15	GND	16	N/C
17	PCIRST#	18	GND
19	N/C	20	VCC3

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
21	GND	22	PCIRST#
23	PERN2	24	3VDual
25	PERP2	26	GND
27	GND	28	1.5 V
29	GND	30	SMBCLK
31	PETN2	32	SMBDATA
33	PETP2	34	GND
35	GND	36	USBD-
37	N/C	38	USBD+
39	N/C	40	GND
41	N/C	42	N/C
43	N/C	44	N/C
45	N/C	46	N/C
47	N/C	48	1.5 V
49	N/C	50	GND
51	N/C	52	VCC3

Table 3-8: Half PCIe Mini Card Slot Pinouts

3.2.7 Infrared Connector

CN Label: **IR1**

CN Type: 5-pin header

CN Location: See **Figure 3-8**

CN Pinouts: See **Table 3-9**

The infrared connector attaches to an infrared receiver for use with remote controls.

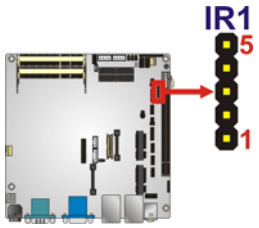


Figure 3-8: Infrared Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+5V
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

Table 3-9: Infrared Connector Pinouts

3.2.8 Inverter Connector

CN Label: **INVERTER1**

CN Type: 5-pin wafer

CN Location: See **Figure 3-9**

CN Pinouts: See **Table 3-10**

The inverter connector provides power to an LCD panel.

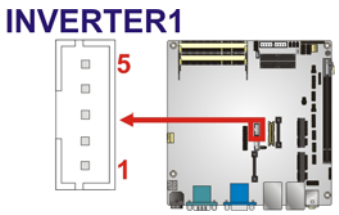


Figure 3-9: Inverter Connector Location

PIN NO.	DESCRIPTION
1	BRIGHTNESS
2	GROUND

PIN NO.	DESCRIPTION
3	+12V
4	GROUND
5	BACKLIGHT ENABLE

Table 3-10: Inverter Connector Pinouts

3.2.9 Keyboard/Mouse Connector

CN Label: **KB_MS1**

CN Type: 6-pin wafer

CN Location: See **Figure 3-10**

CN Pinouts: See **Table 3-11**

The keyboard/mouse connector connects to a PS/2 Y-cable that can be connected to a PS/2 keyboard and mouse.

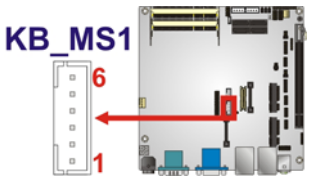


Figure 3-10: Keyboard/Mouse Connector Location

PIN NO.	DESCRIPTION
1	VCC5_KBMS
2	MSDATA
3	MSCLK
4	KBDATA
5	KBCLK
6	KBGND

Table 3-11: Keyboard/Mouse Connector Pinouts

3.2.10 LVDS Connector

CN Label: **LVDS1**

CN Type: 30-pin crimp (2x15)

CN Location: See **Figure 3-11**

CN Pinouts: See **Table 3-12**

The LVDS connector is for an LCD panel connected to the board.

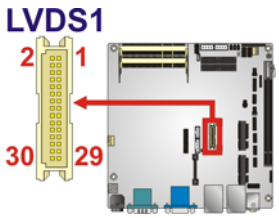


Figure 3-11: LVDS Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	A_Y0	4	A_Y0#
5	A_Y1	6	A_Y1#
7	A_Y2	8	A_Y2#
9	A_CK	10	A_CK#
11	A_Y3	12	A_Y3#
13	GND	14	GND
15	B_Y0	16	B_Y0#
17	B_Y1	18	B_Y1#
19	B_Y2	20	B_Y2#
21	B_CK	22	B_CK#
23	B_Y3	24	B_Y3#
25	GND	26	GND
27	VCC/VCC3	28	VCC/VCC3
29	VCC/VCC3	30	VCC/VCC3

Table 3-12: LVDS Connector Pinouts

3.2.11 PCIe Mini Card Slot

CN Label: **CN3**

CN Type: PCIe Mini card slot

CN Location: See **Figure 3-12**

CN Pinouts: See **Table 3-13**

The PCIe Mini card slot is for installing PCIe Mini expansion cards.

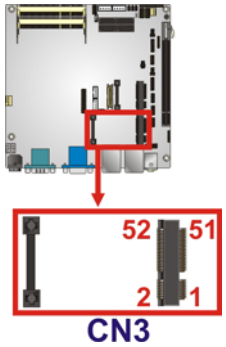


Figure 3-12: PCIe Mini Card Slot Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PCIE_WAKE#	2	VCC3
3	N/C	4	GND
5	N/C	6	1.5 V
7	N/C	8	N/C
9	GND	10	N/C
11	CLK-	12	N/C
13	CLK+	14	N/C
15	GND	16	N/C
17	PCIRST#	18	GND
19	N/C	20	VCC3
21	GND	22	PCIRST#
23	PERN2	24	3VDual
25	PERP2	26	GND
27	GND	28	1.5 V
29	GND	30	SMBCLK
31	PETN2	32	SMBDATA
33	PETP2	34	GND

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
35	GND	36	USBD-
37	N/C	38	USBD+
39	N/C	40	GND
41	N/C	42	N/C
43	N/C	44	N/C
45	N/C	46	N/C
47	N/C	48	1.5 V
49	N/C	50	GND
51	N/C	52	VCC3

Table 3-13: PCIe Mini Card Slot Pinouts

3.2.12 Power Supply Connector

CN Label: **PWR2**

CN Type: 4-pin connector (2x2)

CN Location: See **Figure 3-13**

CN Pinouts: See **Table 3-14**

The Power Supply connector provides +12 V power output.

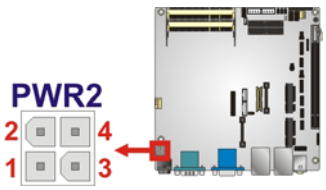


Figure 3-13: +12V Power Supply Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	+12V	4	+12V

Table 3-14: +12V Power Supply Connector Pinouts

3.2.13 RS-232/422/485 Serial Port Connector

CN Label: **COM4, COM6**

CN Type: 14-pin header

CN Location: See **Figure 3-14**

CN Pinouts: See **Table 3-15**

This connector provides RS-232, RS-422, or RS-485 communications.

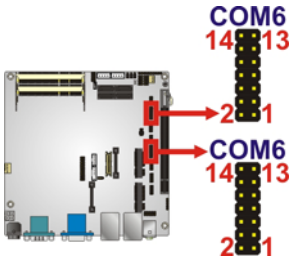


Figure 3-14: RS-232/422/485 Serial Port Location

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	DATA SET READY (DSR)
3	RECEIVE DATA (RXD)
4	REQUEST TO SEND (RTS)
5	TRANSMIT DATA (TXD)
6	CLEAR TO SEND (CTS)
7	DATA TERMINAL READY (DTR)
8	RING INDICATOR (RI)
9	GND (GND)
10	GND (GND)
11	TXD485+
12	TXD485#
13	RXD485+
14	RXD485#

Table 3-15: RS-232/422/485 Serial Port Connector Pinouts

3.2.14 RS-232 Serial Port Connector

CN Label: **COM2, COM3, COM5**

CN Type: 10-pin header

CN Location: See **Figure 3-15**

CN Pinouts: See **Table 3-16**

The connector supports three internal high speed UARTs.

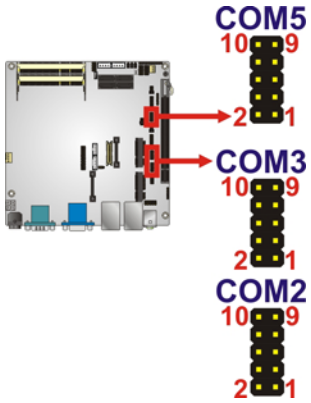


Figure 3-15: RS-232 Serial Port Connector Location

PIN NO	DESCRIPTION
1	DCD
2	DSR
3	SIN
4	RTS
5	SOUT
6	CTS
7	DTR
8	XRI
9	GND
10	GND

Table 3-16: RS-232 Serial Port Connector Pinouts

3.2.15 SATA Drive Connectors

CN Label: **S_ATA1, S_ATA2, S_ATA5, S_ATA6**

CN Type: 7-pin SATA drive connectors

CN Location: See **Figure 3-16**

CN Pinouts: See **Table 3-17**

The four SATA 3Gb/s drive connectors are each connected to a SATA 3Gb/s drive. The SATA 3Gb/s drives transfer data at speeds as high as 3.0 Gb/s.

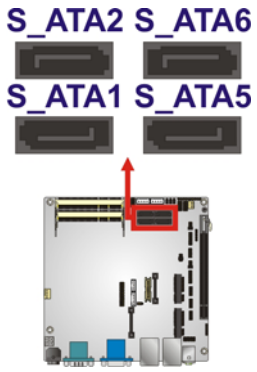


Figure 3-16: SATA Drive Connector Locations

PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 3-17: SATA Drive Connector Pinouts

3.2.16 SATA Power Connectors

CN Label: **CN5**, **CN6**

CN Type: 4-pin wafer

CN Location: See **Figure 3-17**

CN Pinouts: See **Table 3-18**

The SATA Power Connectors provides +5V power output on Pin 1 and +12V power output on Pin 4 to the SATA connectors.

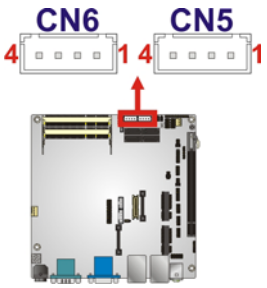


Figure 3-17: SATA Power Connector Locations

PIN NO.	DESCRIPTION
1	+5V (Supports 1A)
2	GND
3	GND
4	+12V (Supports 1A)

Table 3-18: SATA Power Connector Pinouts

3.2.17 SMBus Connector

CN Label: **CN7**

CN Type: 4-pin wafer

CN Location: See **Figure 3-18**

CN Pinouts: See **Table 3-19**

The SMBus (System Management Bus) connector provides low-speed system management communications.

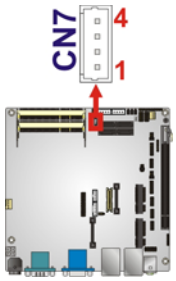


Figure 3-18: SMBus Connector Pinout Locations

PIN NO.	DESCRIPTION
1	GND
2	SDAT
3	SCLK
4	+5V

Table 3-19: SMBus Connector Pinouts

3.2.18 SPDIF Connector

CN Label: **SPDIF1**

CN Type: 5-pin connector

CN Location: See **Figure 3-19**

CN Pinouts: See **Table 3-20**

This connector is used to connect digital audio devices to the system.

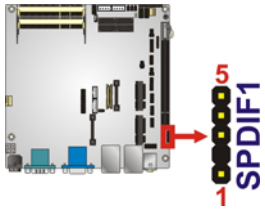


Figure 3-19: SPDIF Connector Pinout Locations

PIN NO.	DESCRIPTION
1	5V
2	NC
3	SPDIFOUT
4	GND
5	SPDIFIN

Table 3-20: SPDIF Connector Pinouts

3.2.19 TPM Connector

CN Label: **TPM1**

CN Type: 20-pin connector

CN Location: See **Figure 3-20**

CN Pinouts: See **Table 3-21**

The Trusted Platform Module (TPM) connector secures the system on bootup.

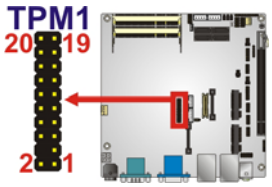


Figure 3-20: TPM1 Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LCLK	2	GND
3	LFRAME#	4	KEY
5	LRERST#	6	+5V
7	LAD3	8	LAD2
9	+3V	10	LAD1
11	LAD0	12	GND
13	SCL	14	SDA
15	SB3V	16	SERIRQ
17	GND	18	GLKRUN#
19	LPCPD#	20	LDRQ#

Table 3-21: TPM1 Connector Pinouts

3.2.20 USB Connectors

CN Label: **USB1 and USB2**

CN Type: 8-pin header (2x4)

CN Location: See **Figure 3-21**

CN Pinouts: See **Table 3-22**

The USB connectors connect to USB devices. Each pin header provides two USB ports.

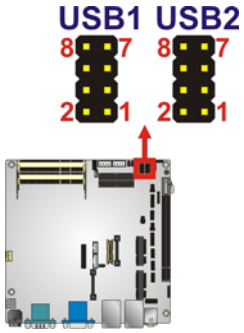


Figure 3-21: USB Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	DATAN-	4	DATA1M+
5	DATAN+	6	DATAM-
7	GND	8	VCC

Table 3-22: USB Connector Pinouts

3.3 External Peripheral Interface Connector Panel

Figure 3-22 shows the KINO-HM551 external peripheral interface connector (Mini-ITX SBC) panel. The KINO-HM551 Mini-ITX SBC panel consists of the following:

- 2 x Ethernet connectors
- 1 x HDMI connectors
- 1 x DB-9 RS-232 connector
- 4 x USB connectors
- 1 x 12 V adapter connector
- 1 x VGA connector
- 1 x DVI connector
- 1 x Audio connector

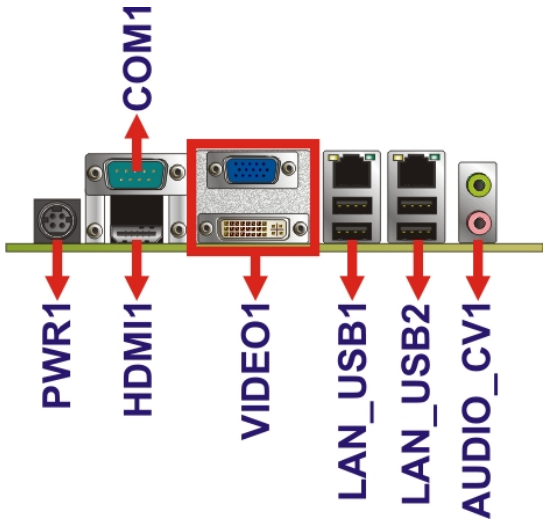


Figure 3-22: KINO-HM551 External Peripheral Interface Connector

3.3.1 Adapter Connector

CN Label: **PWR1**

CN Type: DC-IN

CN Location: See **Figure 3-23**

CN Pinouts: See **Table 3-23**

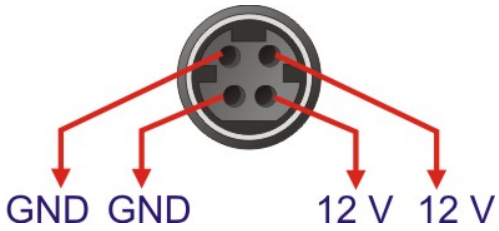


Figure 3-23: 4-pin Power Mini-DIN Connection

PIN NO.	DESCRIPTION
1	12V
2	GND
3	12V
4	GND
5	GND

Table 3-23: Adapter Connector Pinouts

3.3.2 Audio Connector

CN Label:	**AUDIO_CV1**
CN Type:	2 x Audio jack
CN Pinouts:	See **Figure 3-24**

The audio jacks connect to external audio devices.

- Line Out port (Lime): Connects to a headphone or a speaker. With multi-channel configurations, this port can also connect to front speakers.
- Microphone (Pink): Connects a microphone.

Figure 3-24: Audio Connector

3.3.3 Ethernet/USB Connector

CN Label:	**LAN1_USB1 and LAN2_USB2**
CN Type:	RJ-45 and USB port
CN Location:	See **Figure 3-25**
CN Pinouts:	See **Table 3-24** and **Table 3-25**

The KINO-HM551 is equipped with two built-in RJ-45 Ethernet controllers. Each controller can connect to the LAN through one RJ-45 LAN connector.

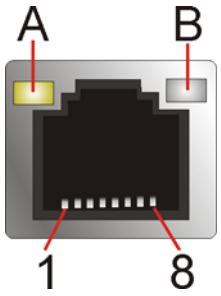


Figure 3-25: Ethernet Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 3-24: LAN Connector Pinouts

PIN NO.	DESCRIPTION
1	VCC
2	DATA-
3	DATA+
4	GND

Table 3-25: USB Connector Pinouts

3.3.4 HDMI Connector

CN Label: **HDMI1**

CN Type: HDMI type A connector

CN Pinouts: See **Table 3-26**

The HDMI (High-Definition Multimedia Interface) connector connects to digital audio or video sources.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDMI_DATA2	13	N/C
2	GND	14	N/C
3	HDMI_DATA2#	15	HDMI_SCL
4	HDMI_DATA1	16	HDMI_SDA
5	GND	17	GND
6	HDMI_DATA1#	18	+5V
7	HDMI_DATA0	19	HDMI_HPD
8	GND	20	HDMI_GND
9	HDMI_DATA0#	21	HDMI_GND
10	HDMI_CLK	22	HDMI_GND
11	GND	23	HDMI_GND
12	HDMI_CLK#		

Table 3-26: HDMI Connector Pinouts

3.3.5 Serial Port DB-9 Connector

CN Label: **COM1**

CN Type: DB-9 Male

CN Location: See **Figure 3-26**

CN Pinouts: See **Table 3-27**

The KINO-HM551 offers one external high speed UART port for a DB-9 female cable.

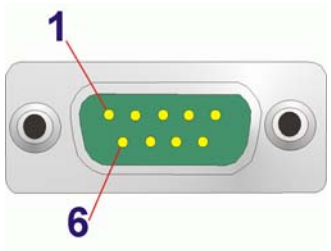


Figure 3-26: Serial Port DB-9 Male Connector

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD1)
2	RECEIVE DATA (RXD1)
3	TRANSMIT DATA (TXD1)
4	DATA TERMINAL READY (DTR1)
5	GND (GND1)
6	DATA SET READY (DSR1)
7	REQUEST TO SEND (RTS1)
8	CLEAR TO SEND (CTS1)
9	RING INDICATOR (RI1)

Table 3-27: USB Connector Pinouts

3.3.6 VGA and DVI Connector

CN Label: **VIDEO1**

CN Type: 15-pin Female (VGA) , 24-pin Female (DVI)

CN Location: See **Figure 3-27**

CN Pinouts: **Table 3-28 and Table 3-29**

This port connects to a monitor that accepts a standard VGA input.

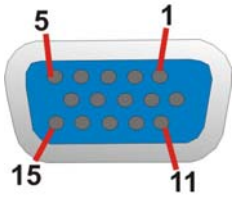


Figure 3-27: VGA Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
11	NC	12	DDCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 3-28: VGA Connector Pinouts

The DVI (Digital Visual Interface) port connects to a monitor that supports DVI video input.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DVI signal differential pair (2-)	2	DVI signal differential pair (2+)
3	GND	4	DVI signal differential pair (4-)
5	DVI signal differential pair (4+)	6	DDCLCK
7	DDCDATA	8	N/C
9	DVI signal differential pair (1-)	10	DVI signal differential pair (1+)
11	GND	12	DVI signal differential pair (3-)
13	DVI signal differential pair (3+)	14	5V supply
15	GND	16	Hot plug detect
17	DVI signal differential pair (0-)	18	DVI signal differential pair (0+)
19	GND	20	DVI signal differential pair (5-)
21	DVI signal differential pair (5+)	22	GND
23	DVI CLK(+)	24	DVI CLK(-)

Table 3-29: DVI Connector Pinouts

Chapter

4

Installation

4.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the KINO-HM551 may result in permanent damage to the KINO-HM551 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the KINO-HM551. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the KINO-HM551 or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the KINO-HM551, place it on an antic-static pad. This reduces the possibility of ESD damaging the KINO-HM551.
- ***Only handle the edges of the PCB***: When handling the PCB, hold the PCB by the edges.

4.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before the KINO-HM551 is installed. All installation notices pertaining to the installation of the KINO-HM551 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the KINO-HM551 and injury to the person installing the motherboard.

4.2.1 Installation Notices

WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the KINO-HM551, KINO-HM551 components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual:
  - The user manual provides a complete description of the KINO-HM551 installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the KINO-HM551 on an antistatic pad:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the KINO-HM551 off:

- When working with the KINO-HM551, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the KINO-HM551 **DO NOT:**

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

4.3 Unpacking

When the KINO-HM551 is unpacked, please check all the unpacking list items listed in Chapter 3 are indeed present. If any of the unpacking list items are not available please contact the KINO-HM551 vendor reseller/vendor where the KINO-HM551 was purchased or contact an IEI sales representative.

4.4 CPU, CPU Cooling Kit and SO-DIMM Installation

WARNING:

A CPU should never be turned on without the specified cooling kit being installed. If the cooling kit (heat sink and fan) is not properly installed and the system turned on, permanent damage to the CPU, KINO-HM551 and other electronic components attached to the system may be incurred. Running a CPU without a cooling kit may also result in injury to the user.

The CPU, CPU cooling kit and DIMM are the most critical components of the KINO-HM551. If one of these component is not installed the KINO-HM551 cannot run.

4.4.1 Socket G1 CPU Installation

WARNING:

CPUs are expensive and sensitive components. When installing the CPU please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure the correct cooling kit is properly installed.

To install a socket G1 CPU onto the KINO-HM551, follow the steps below:

WARNING:

When handling the CPU, only hold it on the sides. DO NOT touch the pins at the bottom of the CPU.

Step 1: **Unlock the CPU retention screw.** When shipped, the retention screw of the CPU socket should be in the unlocked position. If it is not in the unlocked position, use a screwdriver to unlock the screw. See **Figure 4-1**.

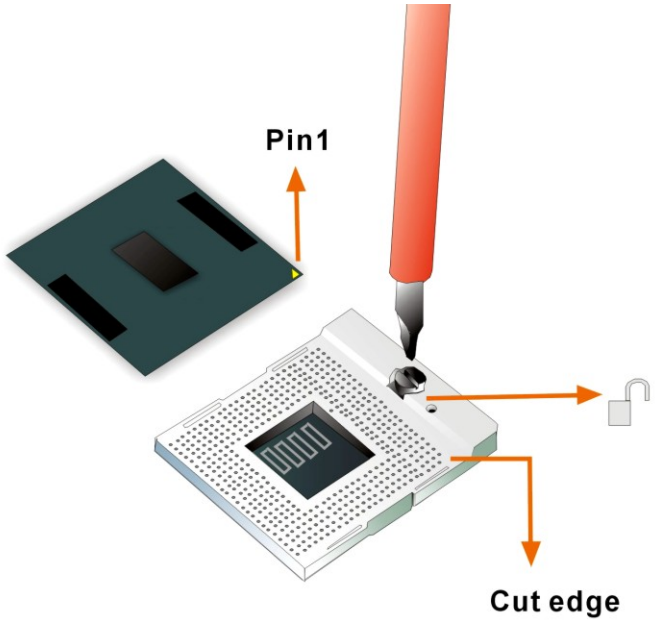


Figure 4-1: Make sure the CPU socket retention screw is unlocked

Step 2: **Inspect the CPU socket.** Make sure there are no bent pins and make sure the socket contacts are free of foreign material. If any debris is found, remove it with compressed air.

Step 3: **Correctly Orientate the CPU**. Make sure the IHS (integrated heat sink) side is facing upwards.

Step 4: **Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket. See **Figure 4-1**.

Step 5: **Align the CPU pins.** Carefully align the CPU pins with the holes in the CPU socket.

Step 6: **Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly.

Step 7: **Lock the retention screw.** Rotate the retention screw into the locked position. See **Figure 4-2**.

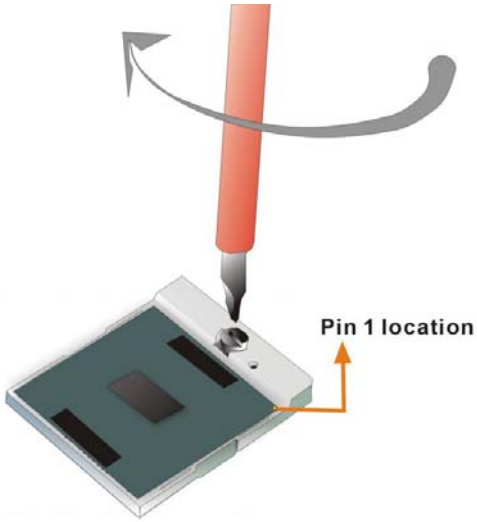


Figure 4-2: Lock the CPU Socket Retention Screw

4.4.2 Socket G1 Cooling Kit Installation

An IEI Socket G1 CPU cooling kit can be purchased separately. (See **Chapter 3**) The cooling kit comprises a CPU heat sink and a cooling fan.

WARNING:

Do not wipe off (accidentally or otherwise) the pre-sprayed layer of thermal paste on the bottom of the heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the cooling kit, please follow the steps below.

Step 1: **Install the cooling kit bracket**. A cooling kit bracket is installed on the rear of the motherboard. Align the bracket with the four retention holes at the back of the motherboard. Once properly aligned, insert four retention screws from the front of the motherboard.

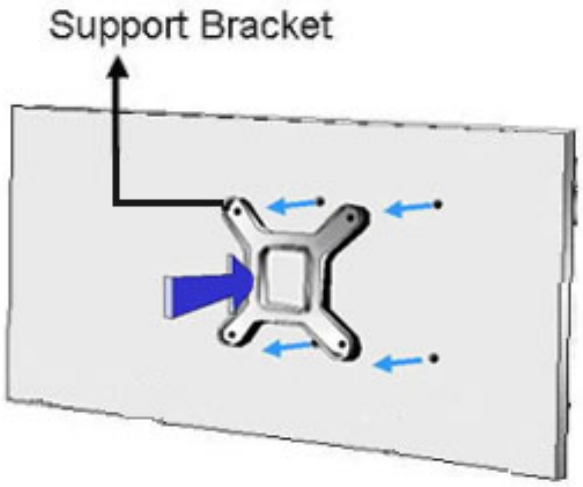


Figure 4-3: Cooling Kit Support Bracket

Step 2: **Open the lever at the top of the heat sink**. Lift the lever at the top of the cooling kit to loosen the cooling kit clamps.

Step 3: **Secure the cooling kit**. Gently place the heat sink and cooling kit onto the CPU. Make sure the hooks are properly secured to the bracket. To secure the cooling kit, close the top lever.

Step 4: **Connect the fan cable**. Connect the cooling kit fan cable to the fan connector on the KINO-HM551. Carefully route the cable and avoid heat generating chips and fan blades.

4.4.3 SO-DIMM Installation

To install an SO-DIMM, please follow the steps below and refer to **Figure 4-4**.

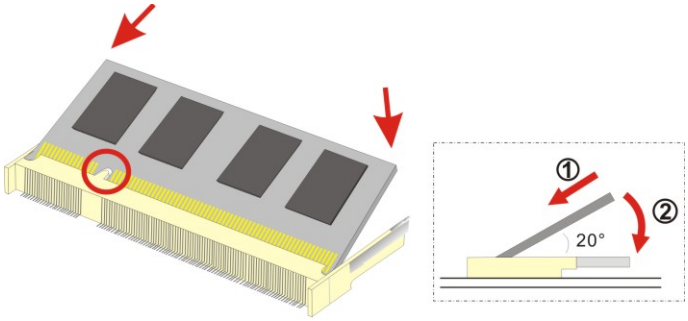


Figure 4-4: SO-DIMM Installation

Step 1: **Locate the SO-DIMM socket**. Place the board on an anti-static mat.

Step 2: **Align the SO-DIMM with the socket**. Align the notch on the memory with the notch on the memory socket.

Step 3: **Insert the SO-DIMM**. Push the memory in at a 20º angle. (See **Figure 4-4**)

Step 4: **Seat the SO-DIMM**. Gently push downwards and the arms clip into place. (See **Figure 4-4**)

4.5 Jumper Settings

NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

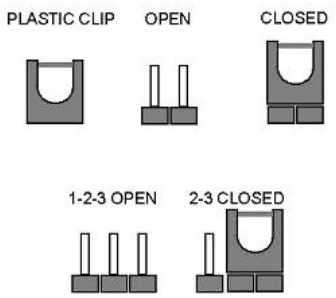


Figure 4-5: Jumper Locations

Before the KINO-HM551 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the KINO-HM551 are listed in **Table 4-1**.

Description	Type	Label
AT/ATX power select	3-pin header	J_ATXCTL1
Clear CMOS	3-pin header	J_CMOS1
ME RTC Register	3-pin header	ME_RTC1
LVDS voltage selection	3-pin header	J_VLVDS1
LVDS panel resolution selection	8-pin header	J_PID1
Serial Port Mode setting	8-pin header	JP2, JP3

Table 4-1: Jumpers

4.5.1 AT/ATX Power Select Jumper Settings

Jumper Label: **J_ATXCTL1**

Jumper Type: 3-pin header

Jumper Settings: See **Table 4-2**

Jumper Location: See **Figure 4-6**

The AT/ATX Power Select jumper specifies the systems power mode as AT or ATX. AT/ATX Power Select jumper settings are shown in **Table 4-2**.

AT Power Select	Description	
Short 1 - 2	Use ATX power	Default
Short 2 - 3	Use AT power	

Table 4-2: AT/ATX Power Select Jumper Settings

The location of the AT/ATX Power Select jumper is shown in **Figure 4-6** below.

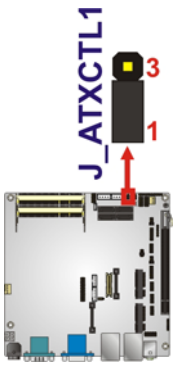


Figure 4-6: AT/ATX Power Select Jumper Location

4.5.2 Clear CMOS Jumper

Jumper Label:	**J_CMOS1**
Jumper Type:	3-pin header
Jumper Settings:	See **Table 4-3**
Jumper Location:	See **Figure 4-7**

If the KINO-HM551 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The clear CMOS jumper settings are shown in **Table 4-3**.

Clear CMOS	Description	
Short 1-2	Keep CMOS Setup	Default
Short 2-3	Clear CMOS Setup	

Table 4-3: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 4-5**

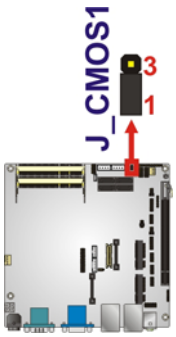


Figure 4-7: AT Auto Button Select Jumper Settings

4.5.3 ME RTC Register Jumper

Jumper Label: **ME_RTC1**

Jumper Type: 3-pin header

Jumper Settings: See **Table 4-4**

Jumper Location: See **Figure 4-8**

The ME RTC Register jumper saves or clears the ME RTC registers. The ME RTC Register jumper settings are shown in **Table 4-4**.

Setting	Description	
Short 1 - 2	Save ME RTC registers	Default
Short 2 – 3	Clear ME RTC registers	

Table 4-4: ME RTC Register Jumper Settings

The location of the ME RTC Register jumper is shown in **Figure 4-8** below.

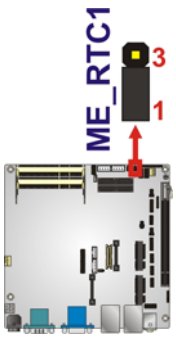


Figure 4-8: ME RTC Register Jumper Location

4.5.4 LVDS Voltage Selection

WARNING:

Incorrect voltages can destroy the LCD panel. Make sure to select a voltage that matches the voltage required by the LCD panel.

Jumper Label:	**J_VLVDS1**
Jumper Type:	3-pin header
Jumper Settings:	See Table 4-5
Jumper Location:	See Figure 4-9

The LCD voltage selection jumper sets the voltage of the power supplied to the LCD panel.

Setting	Description
Short 1-2	Set The Voltage Level Of Panel To VCC3
Short 3-4	Set The Voltage Level Of Panel To VCC

Table 4-5: LVDS Voltage Selection Jumper Settings

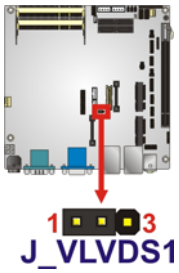


Figure 4-9: LVDS Voltage Selection Jumper Locations

4.5.5 LVDS Screen Resolution Selection

Jumper Label: **J_PID1**

Jumper Type: 8-pin header

Jumper Settings: See **Table 4-6**

Jumper Location: See **Figure 4-10**

The LVDS Screen Resolution Selection jumper allows the LVDS screen voltage to be set.

The LVDS Screen Resolution Selection jumper settings are shown in **Table 4-2**.

Setting	Description	
Open	800 X 600 (18bit)	
Short 1-2	1024 X 768 (18bit)	
Short 3-4	1024 X 768 (24bit)	Default
Short 1-2, 3-4	1280 X 800 (18bit)	
Short 5-6	1280 X 1024 (48bit)	
Short 1-2, 5-6	1366 X 768 (18bit)	
Short 3-4, 5-6	1400 X 1050 (48bit)	
Short 1-2, 2-4, 5-6	1440X 900 (48bit)	
Short 7-8	1600 X 900 (48bit)	
Short 1-2, 7-8	1600 X 1200 (48bit)	
Short 3-4, 7-8	1680X 1050 (48bit)	
Short 1-2, 3-4, 7-8	1920 X 1080 (48bit)	
Short 5-6, 7-8	1920 X 1200 (48bit)	
Short 1-2, 5-6, 7-8	2048 X 1536 (48bit)	

Table 4-6: LVDS Screen Resolution Jumper Settings

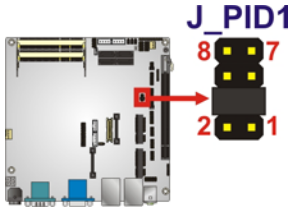


Figure 4-10: LVDS Panel Resolution Jumper Pinout Locations

4.5.6 Serial Port Select Jumper

Jumper Label: **JP2, JP3**

Jumper Type: 8-pin header

Jumper Settings: See **Table 4-7**

Jumper Location: See **Figure 4-11**

This jumper sets the communication protocol of the serial port.

Setting	Description	
Short 1-2	RS-232	Default
Short 3-4	RS-422	
Short 5-6	RS-485	
Short 7-8	RS-485 with RTS Control	

Table 4-7: Serial Port Jumper Settings

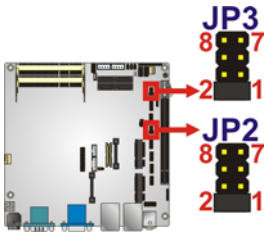


Figure 4-11: Serial Port Jumper Location

4.6 Chassis Installation

4.6.1 Airflow

WARNING:

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the KINO-HM551 must have air vents to allow cool air to move into the system and hot air to move out.

The KINO-HM551 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

4.6.2 Motherboard Installation

To install the KINO-HM551 motherboard into the chassis please refer to the reference material that came with the chassis.

4.7 Internal Peripheral Device Connections

This section outlines the installation of peripheral devices to the onboard connectors

4.7.1 Dual RS-232 Cable with Slot Bracket

The dual RS-232 cable slot connector consists of two connectors attached to two independent cables. Each cable is then attached to a D-sub 9 male connector that is mounted onto a slot. To install the dual RS-232 cable, please follow the steps below.

Step 5: **Locate the connectors**. The locations of the RS-232 connectors are shown in **Chapter 3**.

Step 6: **Insert the cable connectors**. Insert one connector into each serial port box headers. See Figure 4-12. A key on the front of the cable connectors ensures the connector can only be installed in one direction.

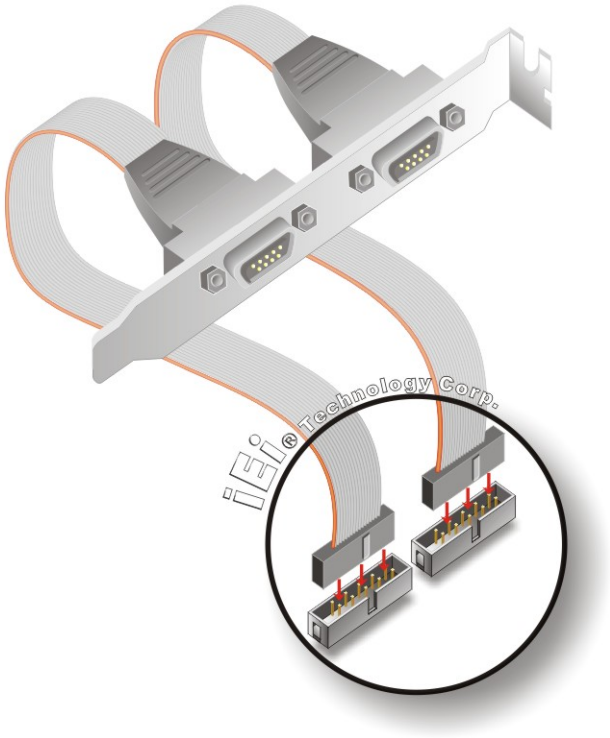


Figure 4-12: Dual RS-232 Cable Installation

Secure the bracket. The dual RS-232 connector has two D-sub 9 male connectors secured on a bracket. To secure the bracket to the chassis please refer to the reference material that came with the chassis.

4.7.2 SATA Drive Connection

The KINO-HM551 is shipped with two SATA drive cables and one SATA drive power cable. To connect the SATA drives to the connectors, please follow the steps below.

Step 7: **Locate the connectors**. The locations of the SATA drive connectors are shown in **Chapter 3**.

Step 8: **Insert the cable connector**. Press the clip on the connector at the end of the SATA cable and insert the cable connector into the on-board SATA drive connector.

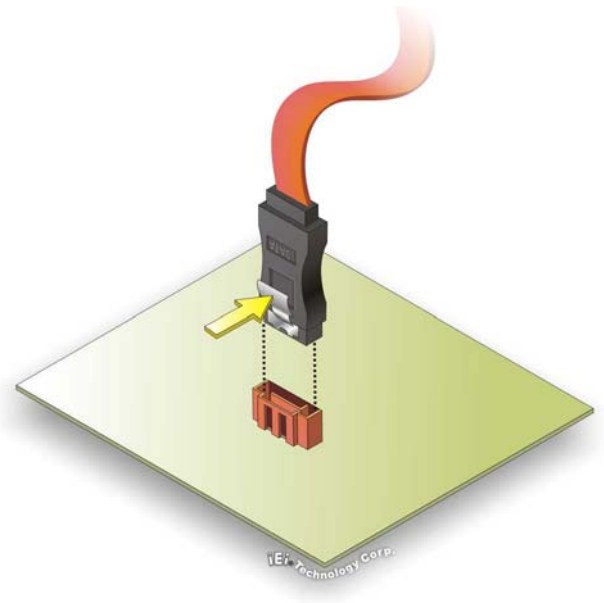


Figure 4-13: SATA Drive Cable Connection

Step 9: **Connect the cable to the SATA disk**. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See Figure 4-14.

Step 10: **Connect the SATA power cable**. Connect the SATA power connector to the back of the SATA drive. See Figure 4-14.

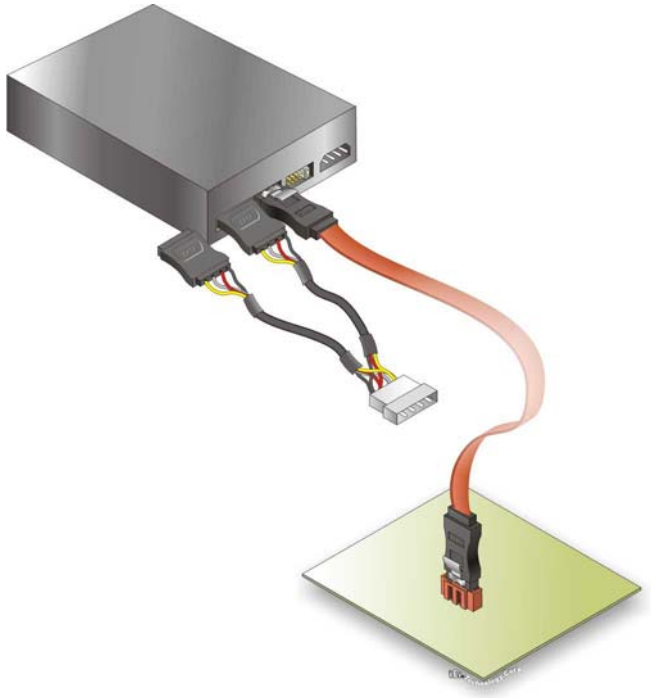


Figure 4-14: SATA Power Drive Connection

4.8 External Peripheral Interface Connection

The following external peripheral devices can be connected to the external peripheral interface connectors.

- Audio devices
- HDMI devices
- RJ-45 Ethernet cable connector
- USB devices
- Serial port devices
- VGA monitor
- DVI devices

To install these devices, connect the corresponding cable connector from the actual device to the corresponding KINO-HM551 external peripheral interface connector making sure the pins are properly aligned.

4.8.1 Audio Connector

The audio jacks on the external audio connector enable the KINO-HM551 to be connected to a stereo sound setup. To install the audio devices, follow the steps below.

Step 1: **Identify the audio plugs**. The plugs on your home theater system or speakers may not match the colors on the rear panel. If audio plugs are plugged into the wrong jacks, sound quality will be very bad.

Step 2: **Plug the audio plugs into the audio jacks**. Plug the audio plugs into the audio jacks. If the plugs on your speakers are different, an adapter will need to be used to plug them into the audio jacks.

- **Line Out port (Lime):** Connects to a headphone or a speaker.
- **Microphone (Pink):** Connects to a microphone.

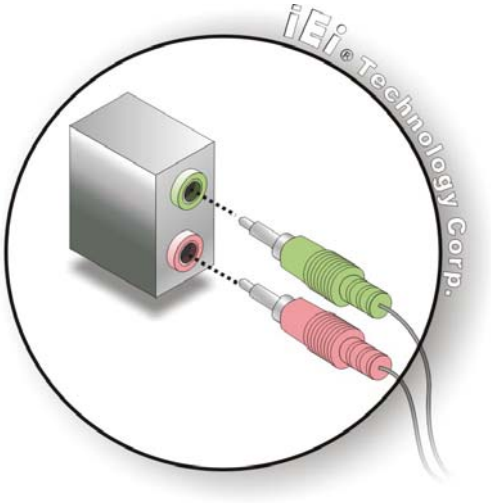


Figure 4-15: Audio Connector

Step 3: **Check audio clarity**. Check that the sound is coming through the right speakers by adjusting the balance front to rear and left to right.

4.8.2 HDMI Display Device Connection

The KINO-HM551 has one female HDMI connector on the external peripheral interface panel. The HDMI connectors are connected to digital display devices. To connect a digital display device to the KINO-HM551, please follow the instructions below.

Step 1: **Locate the HDMI connector**. The location of the HDMI connector is shown in another chapter.

Step 2: **Align the HDMI connector**. Align the male HDMI connector on the digital display device cable with the female HDMI connector on the external peripheral interface.

Step 3: **Insert the HDMI connector** Once the connectors are properly aligned with the male connector, insert the male connector from the digital display device into the female connector on the KINO-HM551.

Step 4: **Secure the connector.** Secure the HDMI connector from the digital display device to the external interface by tightening the two retention screws on either side of the connector.

4.8.3 LAN Connection

There are two external RJ-45 LAN connectors. The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 5: **Locate the RJ-45 connectors**. The location of the LAN connectors is shown in **Chapter 3**.

Step 6: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the KINO-HM551. See Figure 4-16.

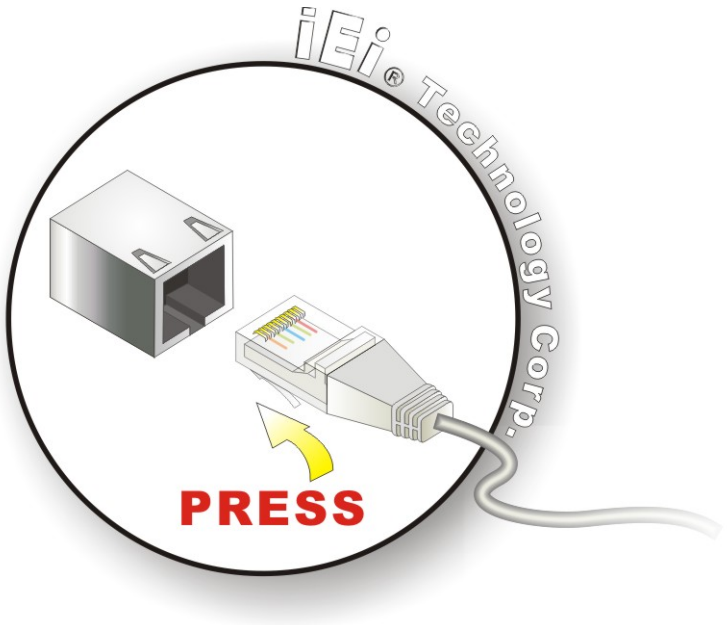


Figure 4-16: LAN Connection

Step 7: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector.

4.8.4 USB Connection

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the KINO-HM551.

Step 1: **Locate the USB Series "A" receptacle connectors**. The location of the USB Series "A" receptacle connectors are shown in **Chapter 3**.

Step 2: **Insert a USB Series "A" plug**. Insert the USB Series "A" plug of a device into the USB Series "A" receptacle on the external peripheral interface. See Figure 4-17.

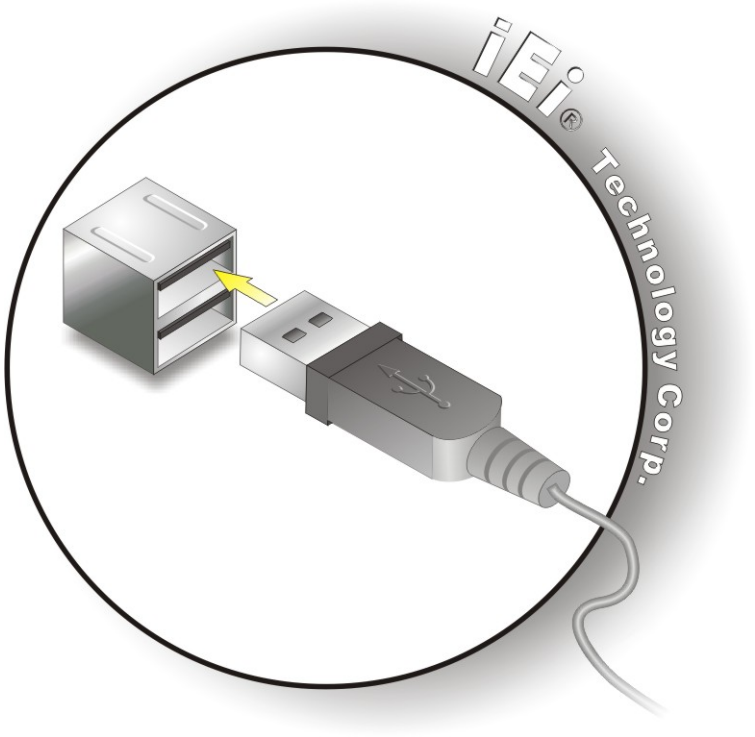


Figure 4-17: USB Connector

4.8.5 Serial Device Connection

The KINO-HM551 has a single female DB-9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the KINO-HM551.

Step 1: **Locate the DB-9 connector**. The location of the DB-9 connector is shown in **Chapter 3**.

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See Figure 4-18.

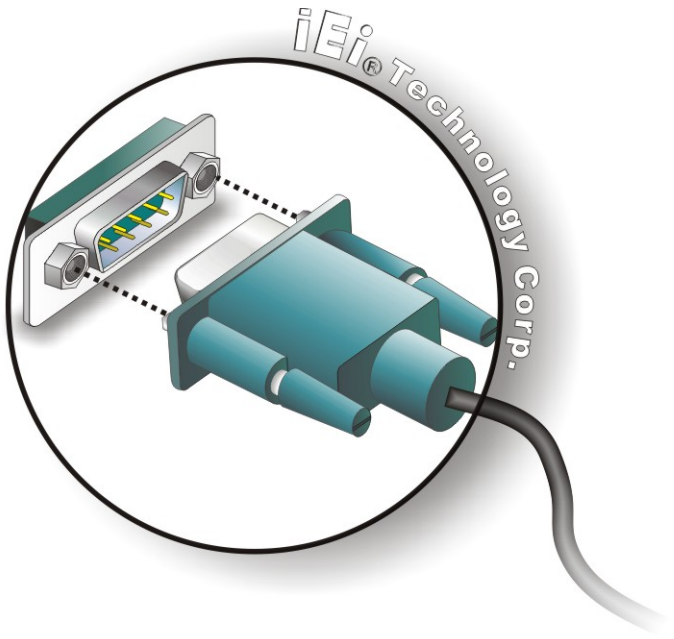


Figure 4-18: Serial Device Connector

Step 3: **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector

4.8.6 VGA Monitor Connection

The KINO-HM551 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the KINO-HM551, please follow the instructions below.

Step 1: **Locate the female DB-15 connector**. The location of the female DB-15 connector is shown in **Chapter 3**.

Step 2: **Align the VGA connector**. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

Step 3: **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the KINO-HM551. See Figure 4-19.

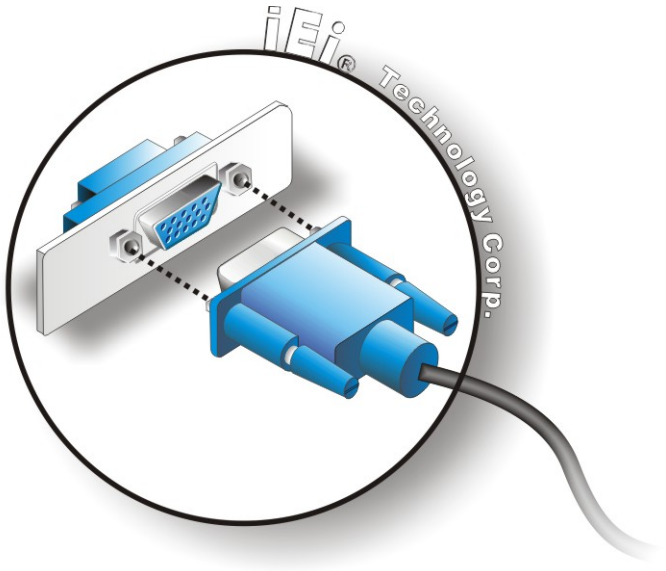


Figure 4-19: VGA Connector

Step 4: **Secure the connector**. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

4.8.7 DVI Display Device Connection

The KINO-HM551 has a single female DVI-D connector on the external peripheral interface panel. The DVI-D connector is connected to a digital display device. To connect a digital display device to the KINO-HM551, please follow the instructions below.

Step 1: **Locate the DVI-D connector**. The location of the DVI-D connector is shown in another chapter.

Step 2: **Align the DVI-D connector**. Align the male DVI-D connector on the digital display device cable with the female DVI-D connector on the external peripheral interface.

Step 3: **Insert the DVI-D connector** Once the connectors are properly aligned with the male connector, insert the male connector from the digital display device into the female connector on the KINO-HM551. See Figure 4-20.

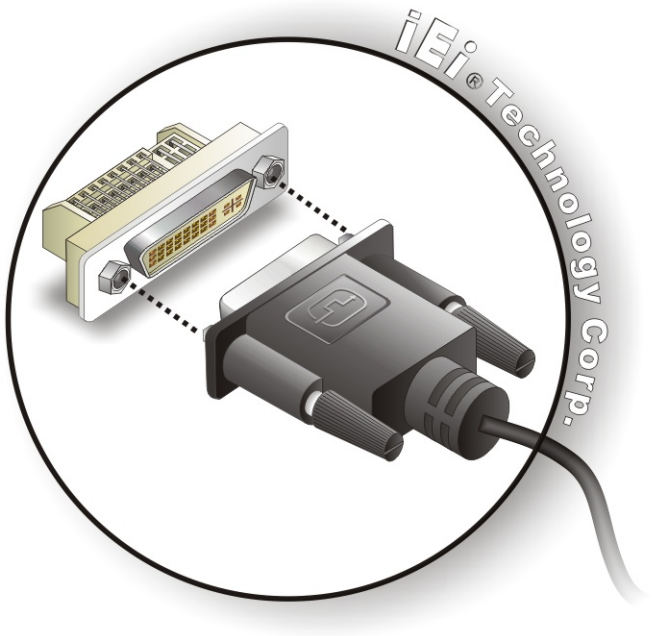


Figure 4-20: DVI Connector

Secure the connector. Secure the DVI-D connector from the digital display device to the external interface by tightening the two retention screws on either side of the connector.

4.9 Software Installation

All the drivers for the KINO-HM551 are on the CD that came with the system. To install the drivers, please follow the steps below.

Step 1: Insert the CD into a CD drive connected to the system.

NOTE:

If the installation program doesn't start automatically:
Click "Start->My Computer->CD Drive->autorun.exe"

Step 2: The driver main menu appears (**Figure 4-21**).

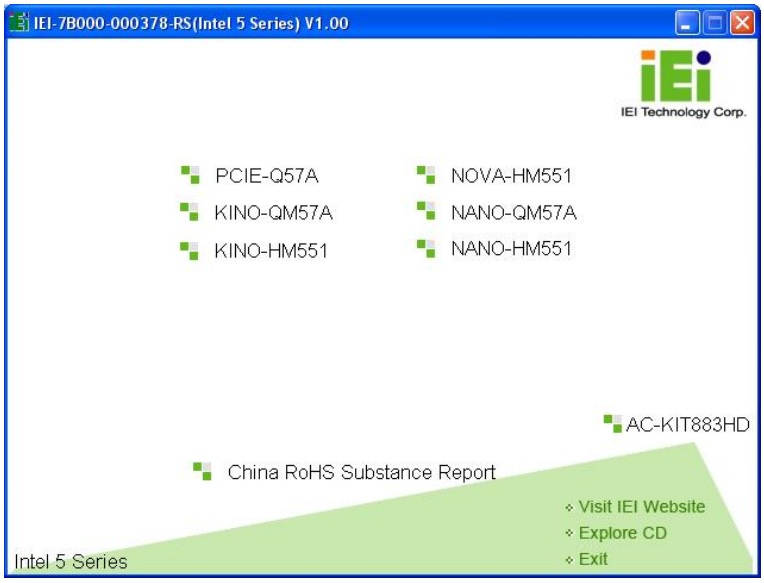


Figure 4-21: Introduction Screen

Step 3: Click **KINO-HM551**.

Step 4: A new screen with a list of available drivers appears (**Figure 4-22**).

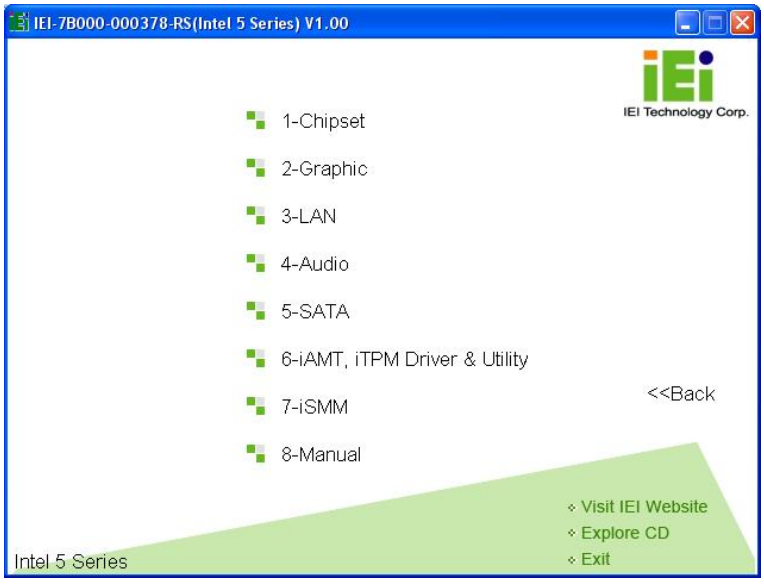


Figure 4-22: Available Drivers

Step 5: Install all of the necessary drivers in this menu.

Chapter

5

BIOS Screens

5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.

5.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Load previous values.
F3 key	Load optimized defaults
F4 key	Save all the CMOS changes

Key	Function
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

5.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Chapter 4**.

5.1.5 BIOS Menu Bar

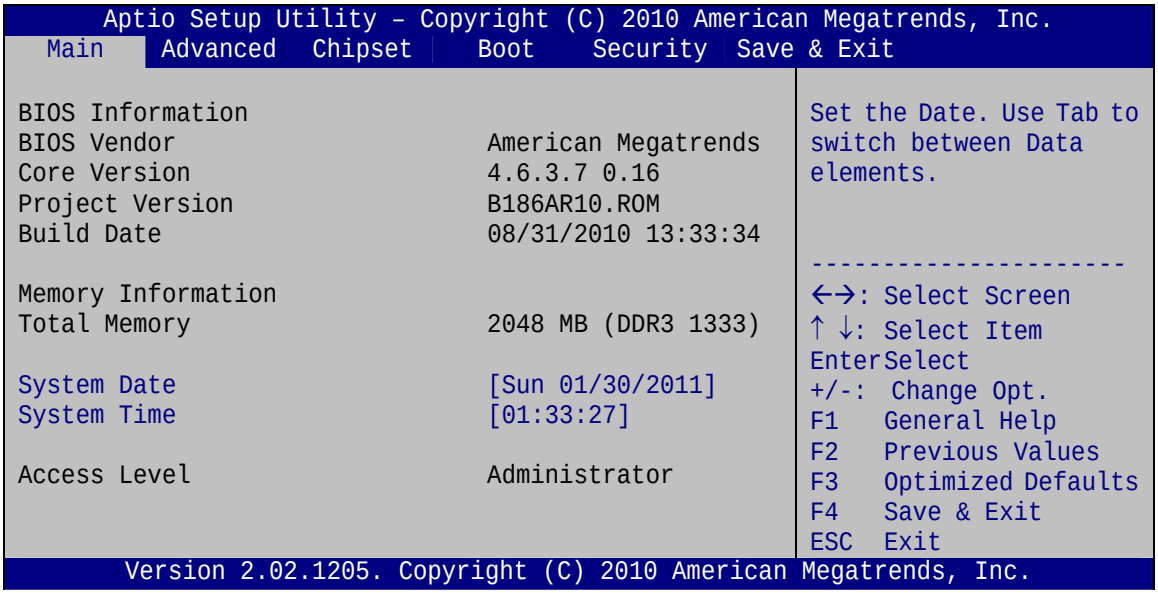
The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Boot – Changes the system boot configuration.
- Security – Sets User and Supervisor Passwords.
- Save & Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main

➔ BIOS Information

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- **BIOS Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Project Version:** the board version
- **Build Date:** Date the current BIOS version was made

➔ Memory Information

The **Memory Information** lists a brief summary of the on-board memory. The fields in **Memory Information** cannot be changed.

- **Total Memory:** Displays the auto-detected system memory size and type.

The System Overview field also has two user configurable fields:

➔ **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

➔ **System Time [xx:xx:xx]**

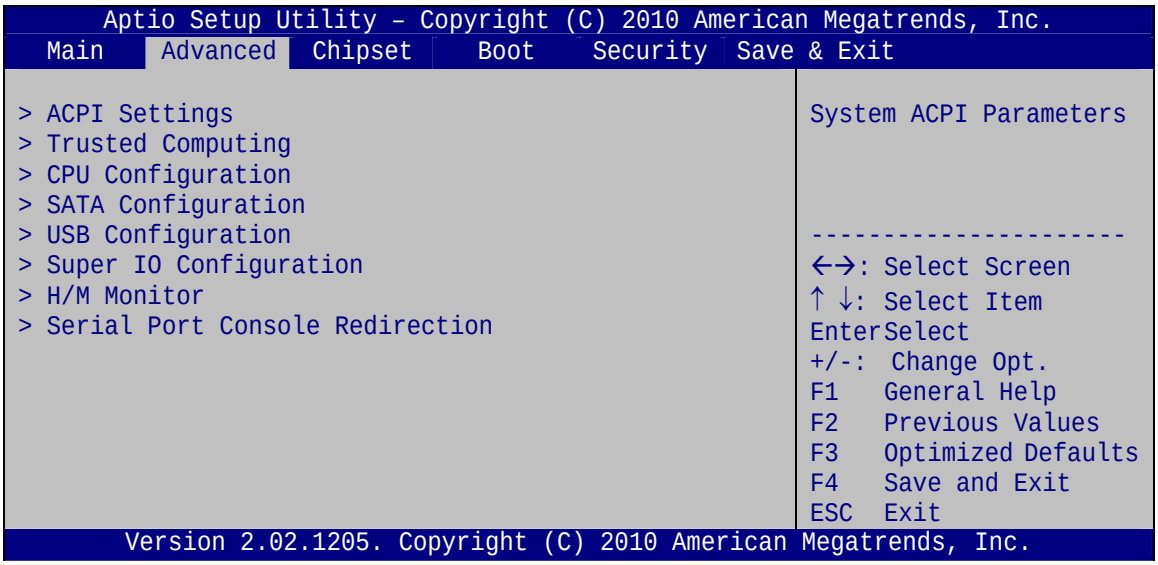
Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING!

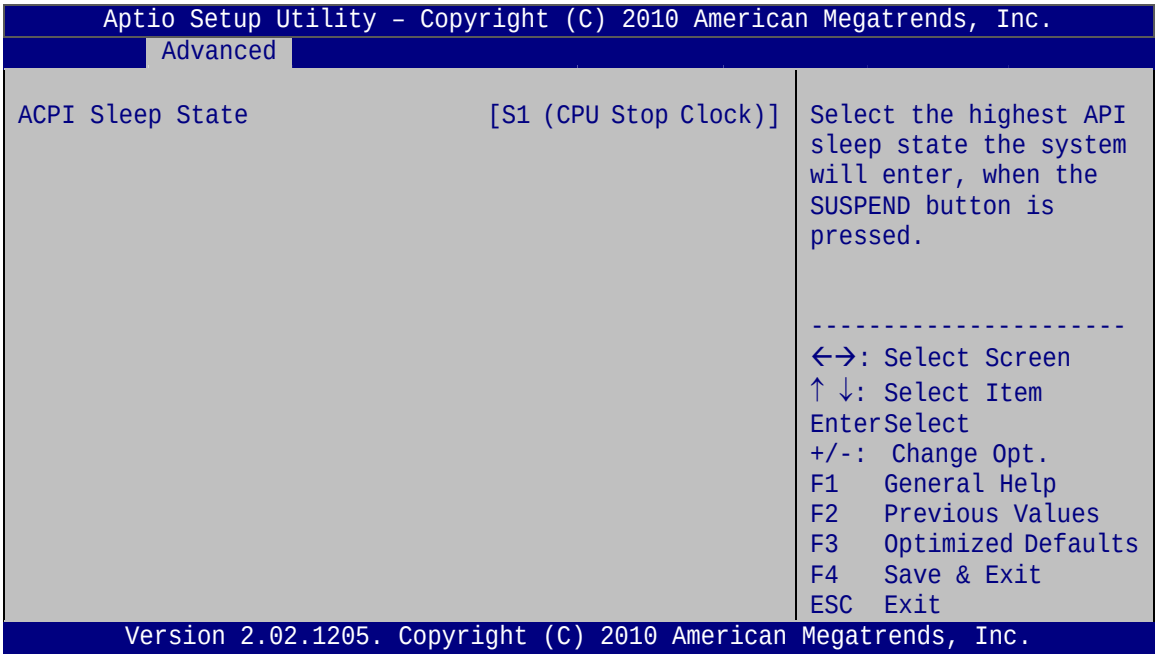
Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.



BIOS Menu 2: Advanced

5.3.1 ACPI Configuration

The **ACPI Configuration** menu (**BIOS Menu 3**) configures the Advanced Configuration and Power Interface (ACPI) options.



BIOS Menu 3: ACPI Configuration

➔ **ACPI Sleep State [S1 (CPU Stop Clock)]**

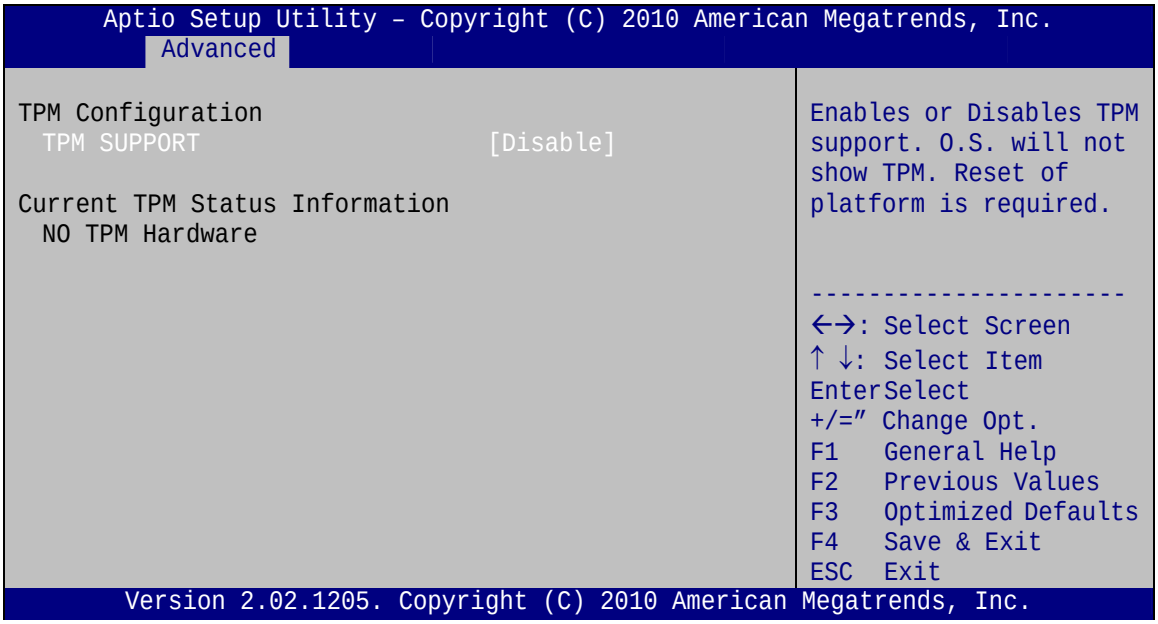
Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

➔ **S1 (CPU Stop Clock)** **DEFAULT** The system enters S1 (POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

➔ **S3 (Suspend to RAM)** The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.

5.3.2 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 4**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 4: TPM Configuration

➔ **TPM Support [Disable]**

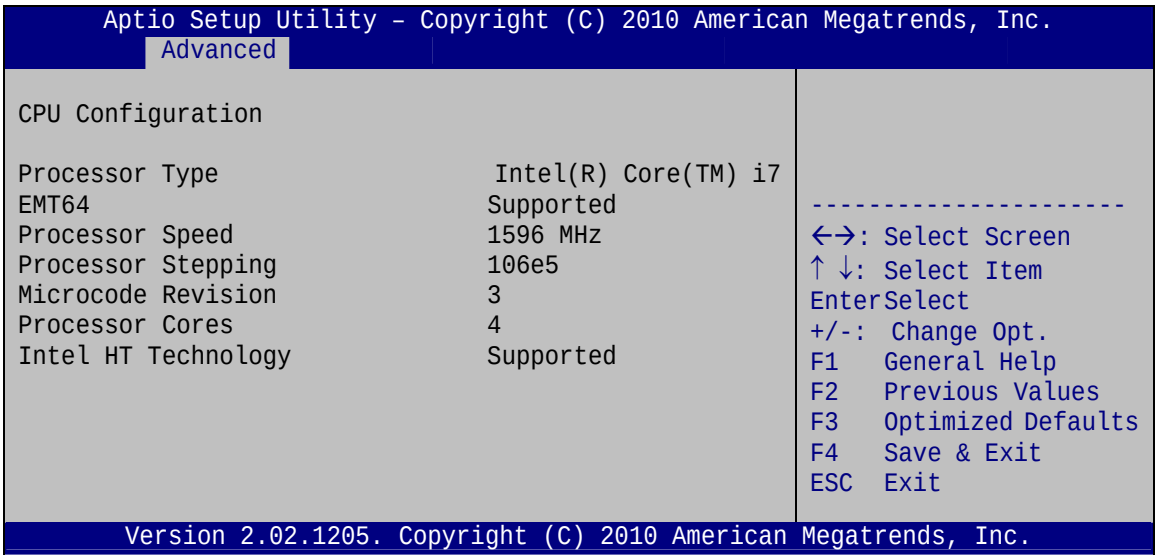
Use the **TPM Support** option to configure support for the TPM.

➔ **Disable** **DEFAULT** TPM support is disabled.

➔ **Enable** TPM support is enabled.

5.3.3 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 5**) to view detailed CPU specifications and configure the CPU.



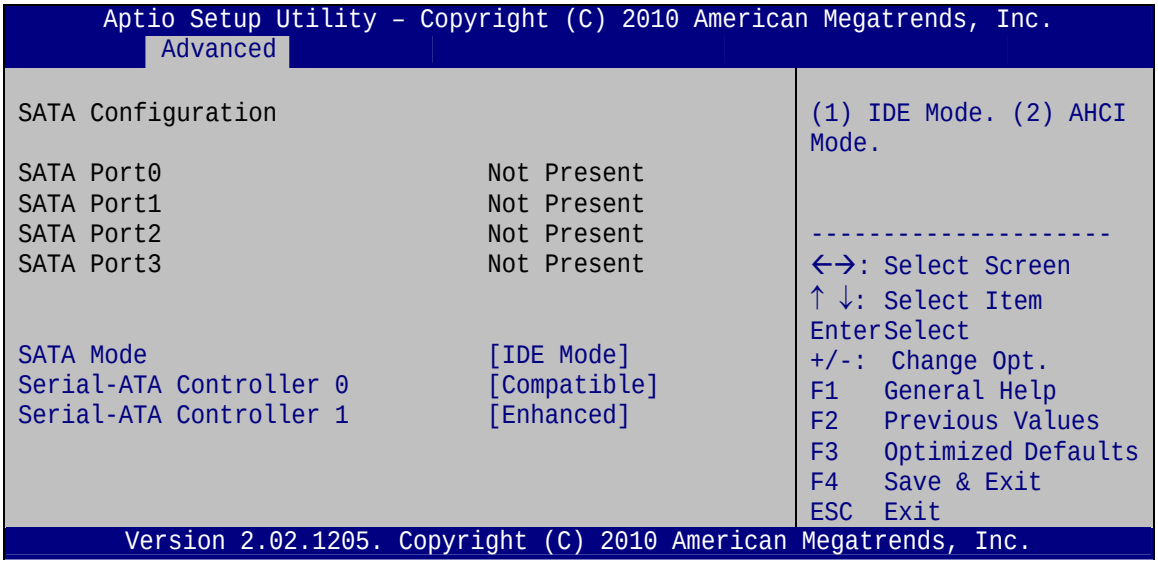
BIOS Menu 5: CPU Configuration

The CPU Configuration menu (**BIOS Menu 5**) lists the following CPU details:

- Processor Type: Lists the brand name of the CPU being used
- EMT64: Indicates if the EM64T is supported by the CPU.
- Processor Speed: Lists the CPU processing speed
- Processor Stepping: Lists the CPU processing stepping
- Microcode Revision: Lists the microcode revision
- Processor Cores: Lists the number of the processor core
- Intel HT Technology: Indicates if the Intel HT Technology is supported by the CPU.

5.3.4 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 6**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 6: IDE Configuration

➔ **SATA Mode [IDE Mode]**

Use the **SATA Mode** option to configure SATA devices as normal IDE devices.

➔ **Disable** Disables SATA devices.

➔ **IDE Mode** **DEFAULT** Configures SATA devices as normal IDE device.

➔ **AHCI Mode** Configures SATA devices as AHCI device.

➔ **Serial-ATA Controller 0/1 [Enhanced]**

Use the **Serial-ATA Controller** option to configure the Serial-ATA controller mode when the SATA mode is set to IDE Mode.

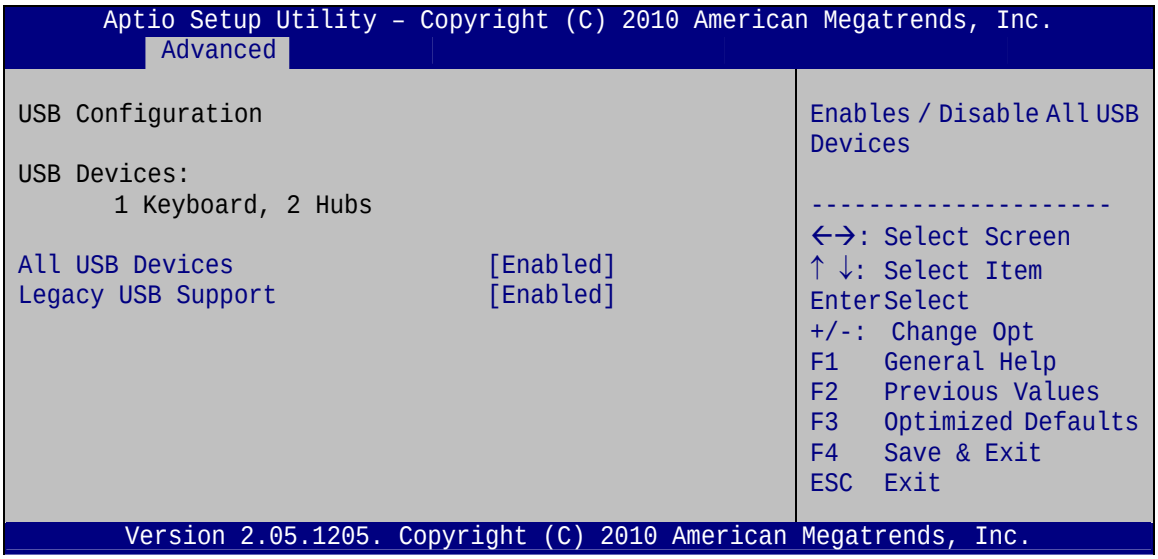
➔ **Disable** Disables Serial-ATA controller.

➔ **Enhanced** Configures the Serial-ATA controller to be in enhanced mode. In this mode, IDE channels and SATA channels are separated. Some legacy OS do not support this mode.

➔ **Compatible** **DEFAULT** Configures the Serial-ATA controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels.

5.3.5 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 7**) to read USB configuration information and configure the USB settings.



BIOS Menu 7: USB Configuration

➔ **USB Devices**

The **USB Devices Enabled** field lists the USB devices that are enabled on the system

➔ **All USB Devices [Enabled]**

Use the **All USB Devices** option to enable the USB devices.

➔ **Disabled** All USB devices are disabled.

➔ **Enabled** **DEFAULT** All USB devices are enabled.

➔ **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

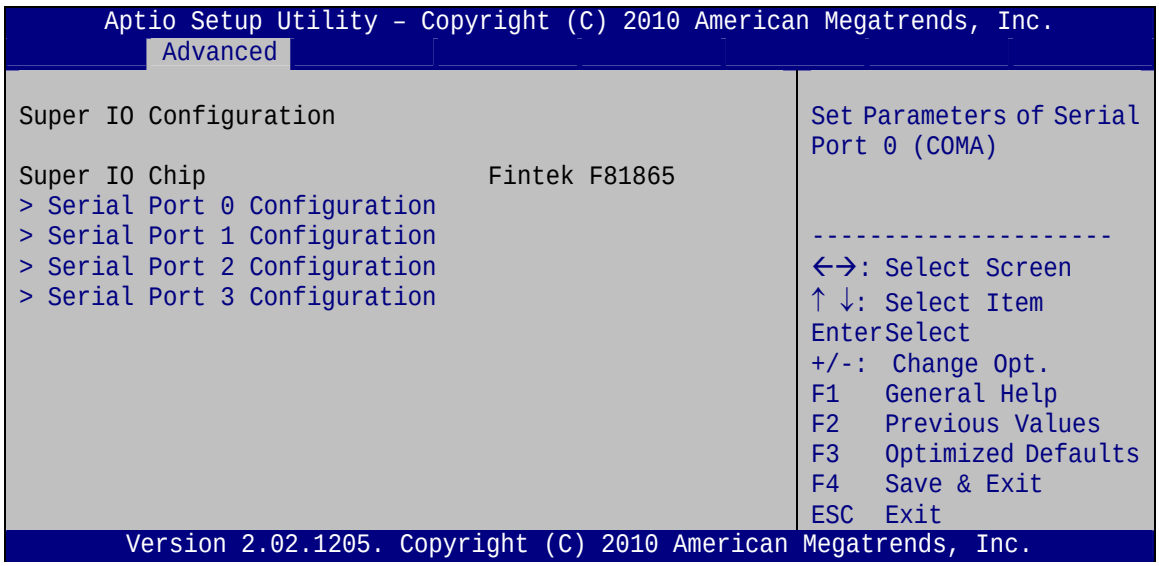
➔ **Disabled** Legacy USB support disabled

➔ **Enabled** **DEFAULT** Legacy USB support enabled

➔ **Auto** Legacy USB support disabled if no USB devices are connected

5.3.6 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 8**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 8: Super IO Configuration

5.3.7 H/W Monitor

The H/W Monitor menu (**BIOS Menu 9**) shows the operating temperature, fan speeds and system voltages.

```
Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
        Advanced

PC Health Status

CPU Temperature                 :+53 C
SYS Temperature                 :+29 C
CPU FAN Speed                   :4702 RPM
SYS FAN Speed                   :N/A
VCC3V                           :+3.296 V
V_core                          :+1.056 V
+5V                             :+1.056 V
+12V                            :+1.056 V
+1.5V                           :+1.512 V
VSB3V                           :+3.312 V
VBAT                            :+3.184 V
CPU Smart Fan control           [Auto Mode]
Temperature Bound 1             60
Temperature Bound 2             50
Temperature Bound 3             40
Temperature Bound 4             30
Sys Smart Fan control           [Auto Mode]
Temperature Bound 1              60
Temperature Bound 2              50
Temperature Bound 3              40
Temperature Bound 4              30

                                ---------------------
                                ←→: Select Screen
                                ↑ ↓: Select Item
                                EnterSelect
                                +/-:  Change Opt.
                                F1    General Help
                                F2    Previous Values
                                F3    Optimized Defaults
                                F4    Save & Exit
                                ESC   Exit

Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 9: Hardware Health Configuration

➔ **CPU Smart Fan Control [Auto Mode]**

Use the **CPU Smart Fan Mode Control** option to configure the CPU fan.

➔ **Auto Mode** **DEFAULT** The fan adjusts its speed using these settings by RPM:

- Temperature Bound 1
- Temperature Bound 2
- Temperature Bound 3
- Temperature Bound 4

➔ **Manual Mode** The fan spins at the speed set in:
Manual Duty Cycle Setting
(Min=0, Max=100)

NOTE:

CPU fan functions are supported only when using a 4-pin fan. When using a 3-pin fan, the functions are not supported.

➔ **First Boundary Temperature [60]**

WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **Second Boundary Temperature [50]**

WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **Third Boundary Temperature [40]**

WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **Fourth Boundary Temperature [30]**

WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **SYS Smart Fan Control [Auto Mode]**

Use the **SYS Smart Fan Control** option to configure the SYS fan.

➔ **Auto Mode** **DEFAULT** The fan adjusts its speed using these settings by RPM:

Temperature Bound 1

Temperature Bound 2

Temperature Bound 3

Temperature Bound 4

➔ **Manual Mode** The fan spins at the speed set in:
Manual Duty Cycle Setting
(Min=0, Max=100)

NOTE:

SYS fan functions are supported only when using a 4-pin fan. When using a 3-pin fan, the functions are not supported.

➔ **First Boundary Temperature [60]**

WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **Second Boundary Temperature [50]**

WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **Third Boundary Temperature [40]**

WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **Fourth Boundary Temperature [30]**

WARNING:

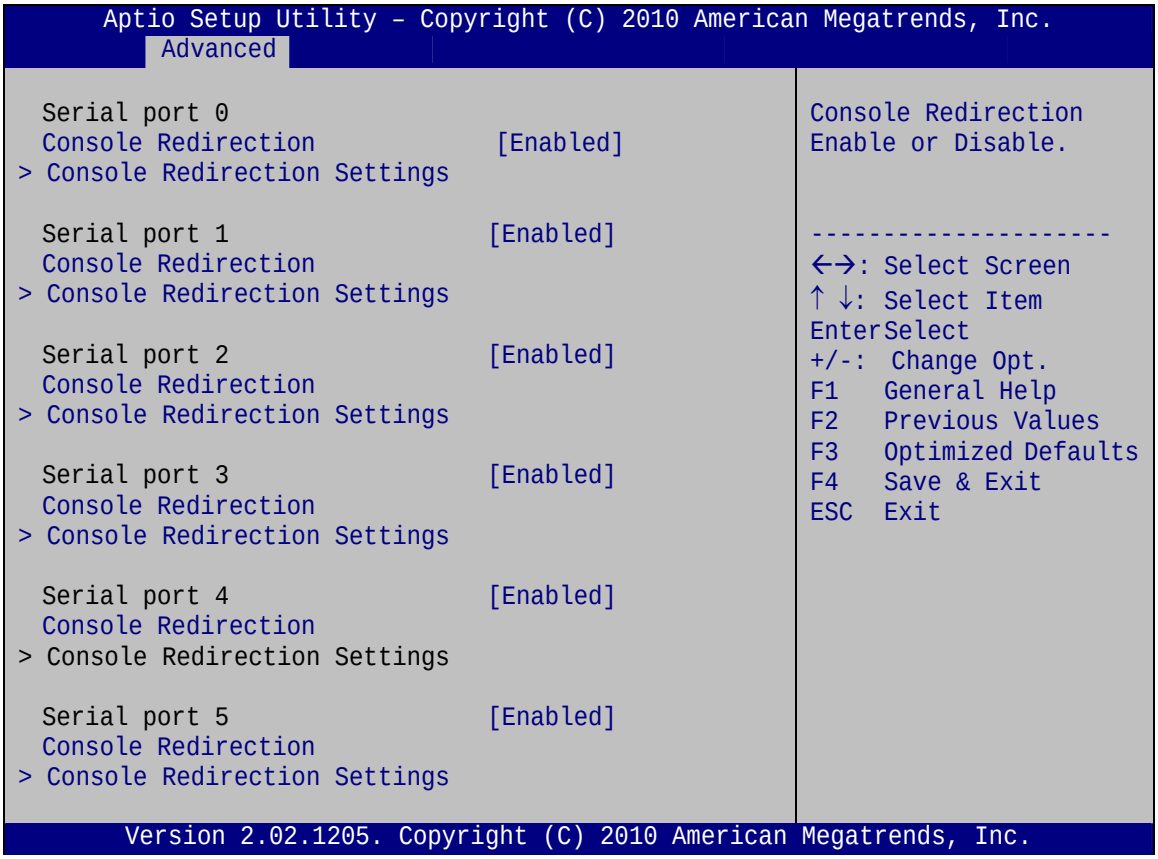
CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

- Minimum Value: 0°C
- Maximum Value: 127°C

5.3.7.1 Serial Port Console Redirection

The Serial Port Console Redirection menu (**BIOS Menu 10**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.



BIOS Menu 10: Serial Port Console Redirection Menu

➔ **Console Redirection**

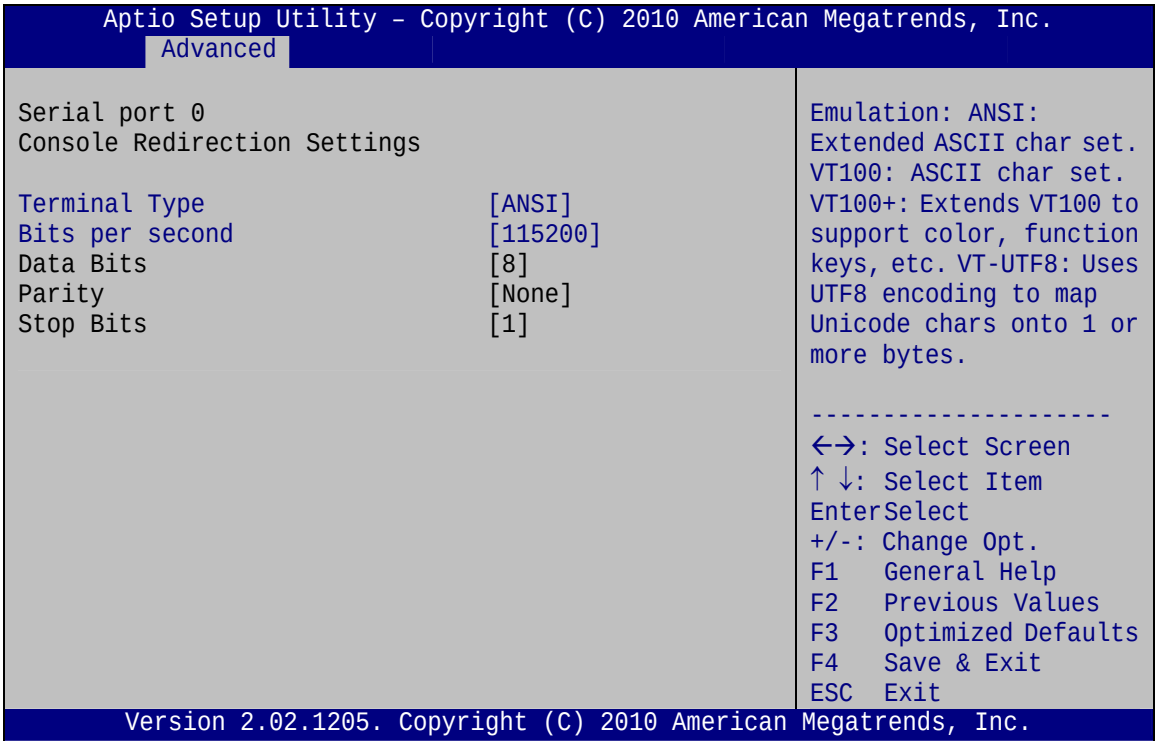
Use **Console Redirection** option to enable or disable the console redirection function.

➔ **Disabled** Disabled the console redirection function

➔ **Enabled** Enabled the console redirection function

5.3.7.2 Console Redirection Settings

The **Console Redirection Settings** menu (**BIOS Menu 11**) allows the console redirection options to be configured. The option is active when Console Redirection option is enabled.



BIOS Menu 11: Console Redirection Settings

➔ **Terminal Type [ANSI]**

Use the **Terminal Type** option to specify the remote terminal type.

➔ **VT100**		The target terminal type is VT100
➔ **VT100+**		The target terminal type is VT100+
➔ **VT-UTF8**		The target terminal type is VT-UTF8
➔ **ANSI**	**DEFAULT**	The target terminal type is ANSI

➔ **Bits per second [115200]**

Use the **Bits per second** option to specify the transmission speed of the serial port.

➔	**9600**		The transmission speed is 9600
➔	**19200**		The transmission speed is 19200
➔	**38400**		The transmission speed is 38400
➔	**57600**		The transmission speed is 57600
➔	**115200**	**DEFAULT**	The transmission speed is 115200

5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 12**) to access the Northbridge and Southbridge configuration menus

WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
  Main    Advanced  Chipset    Boot    Security  Save & Exit

> North Bridge                                  North Bridge Parameters
> South Bridge
> Intel IDG SWSCI OpRegion


                                                --------------------
                                                ←→: Select Screen
                                                ↑ ↓: Select Item
                                                EnterSelect
                                                +/-:  Change Opt.
                                                F1    General Help
                                                F2    Previous Values
                                                F3    Optimized Defaults
                                                F4    Save & Exit
                                                ESC   Exit

        Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 12: Chipset

5.4.1 Northbridge Configuration

Use the **Northbridge Chipset Configuration** menu (**BIOS Menu 13**) to configure the Northbridge chipset.

```
Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
                    Chipset

Memory Information                          Select which graphics
                                            controller to use as the
CPU Type                    Clarksfield     primary boot device.

Total Memory                2048 MB (DDR3 1333)

Memory Slot0                2048 MB (DDR3 1333)
Memory Slot2                   0 MB (DDR3 1333)

CAS# Latency(tCL)           9
RAS# Active Time(tRAS)      24              ----------------------
Row Precharge Time(tRP)     9               ←→: Select Screen
RAS# to CAS# Delay(tRCD)    9               ↑ ↓: Select Item
Write Recovery Time(tWR)    10              EnterSelect
Row Refresh Cycle Time(tRFC) 74             +/-:  Change Opt.
Write to Read Delay(tWTR)   5               F1    General Help
Active to Active Delay(tRRD) 4              F2    Previous Values
Read CAS# Precharge(tRTP)   5               F3    Optimized Defaults
                                            F4    Save & Exit
Initate Graphic Adapter     [PEG/IGD]       ESC   Exit

        Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 13:Northbridge Chipset Configuration

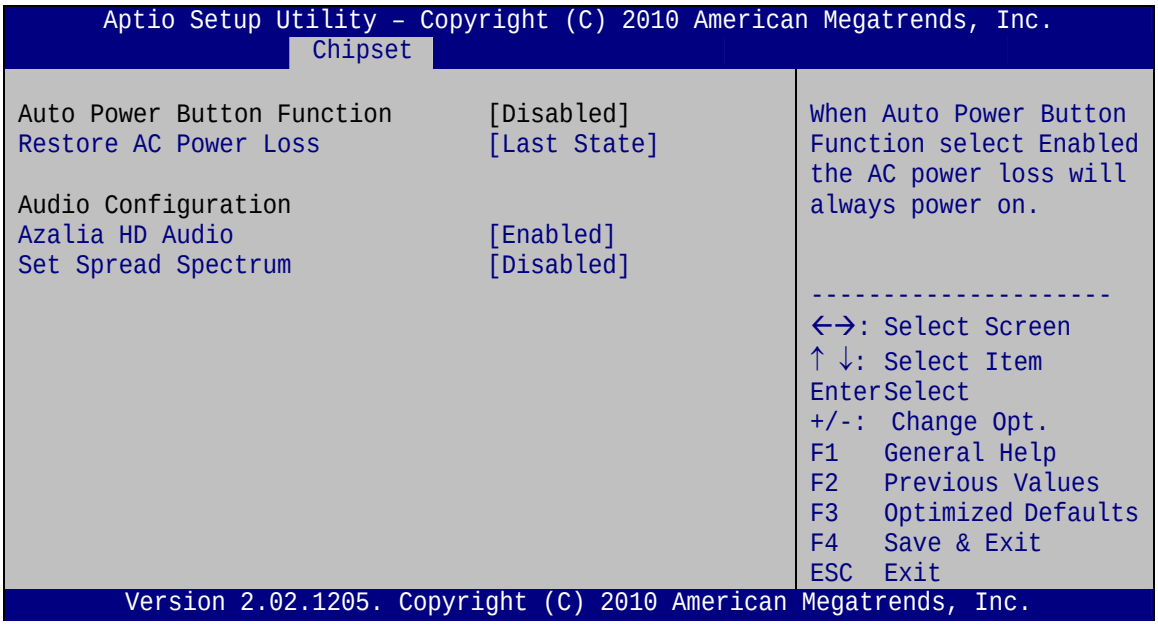
➔ **Initiate Graphics Adapter [PEG/IGD]**

Use the **Initiate Graphics Adapter** option to select the graphics controller used as the primary boot device. Select either an integrated graphics controller (IGD) or a combination of PCI graphics controller, a PCI express (PEG) controller or an IGD. Configuration options are listed below:

- IGD
- PEG/IGD **DEFAULT**

5.4.2 Southbridge Configuration

Use the **Southbridge Configuration** menu (**BIOS Menu 14**) to configure the Southbridge chipset.



BIOS Menu 14:Southbridge Chipset Configuration

➔ **Restore AC Power Loss [Last State]**

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

➔ **Power Off**		The system remains turned off
➔ **Power On**		The system turns on
➔ **Last State**	**DEFAULT**	The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

➔ **Azalia HD Audio [Enabled]**

Use the **Azalia HD Audio** option to enable or disable the High Definition Audio controller.

➔ **Disabled**		The onboard High Definition Audio controller is disabled
➔ **Enabled**	**DEFAULT**	The onboard High Definition Audio controller automatically detected and enabled

➔ **Set Spread Spectrum [Disabled]**

Use the **Set Spread Spectrum function** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

➔ **Disabled**	**DEFAULT**	EMI not reduced
➔ **Enabled**		EMI reduced

5.4.3 Intel IGD SWSCI OpRegion

Use the **Intel IGD SWSCI OpRegion** menu to configure the video device connected to the system.

```
Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
                    Chipset
Intel IGD SWSCI OpRegion Configuration        Select the DVMT/FIXED
                                              Mode Memory size used by
DVMT/FIXED Memory              [Maximum]      Internal Graphics Device
Active LFP                     [Enable LVDS]
LCD Panel Type                 [Select by Panel ID]
Panel ID Resolution            1024x768 24bit
                                              ----------------------
                                              ←→: Select Screen
                                              ↑ ↓: Select Item
                                              Enter Select
                                              +/-: Change Opt.
                                              F1   General Help
                                              F2   Previous Values
                                              F3   Optimized Defaults
                                              F4   Save & Exit
                                              ESC  Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 15: Intel IGD SWSCI OpRegion

➔ **DVMT/FIXED Memory [Maximum]**

Use the **DVMT/FIXED Memory** option to select memory size used by the Internal Graphics Device. Configuration options are listed below.

- 128 MB

- 256 MB
- Maximum Default

➔ **Active LFP [Enable LVDS]**

Use the **Active LFP** option to enable the LVDS connector. Configuration options are listed below.

- Enable LVDS Default
- Disable LVDS

➔ **LCD Panel Type [Select by Panel ID]**

Use the **LCD Panel Type** option to select the type of flat panel connected to the system. Configuration options are listed below.

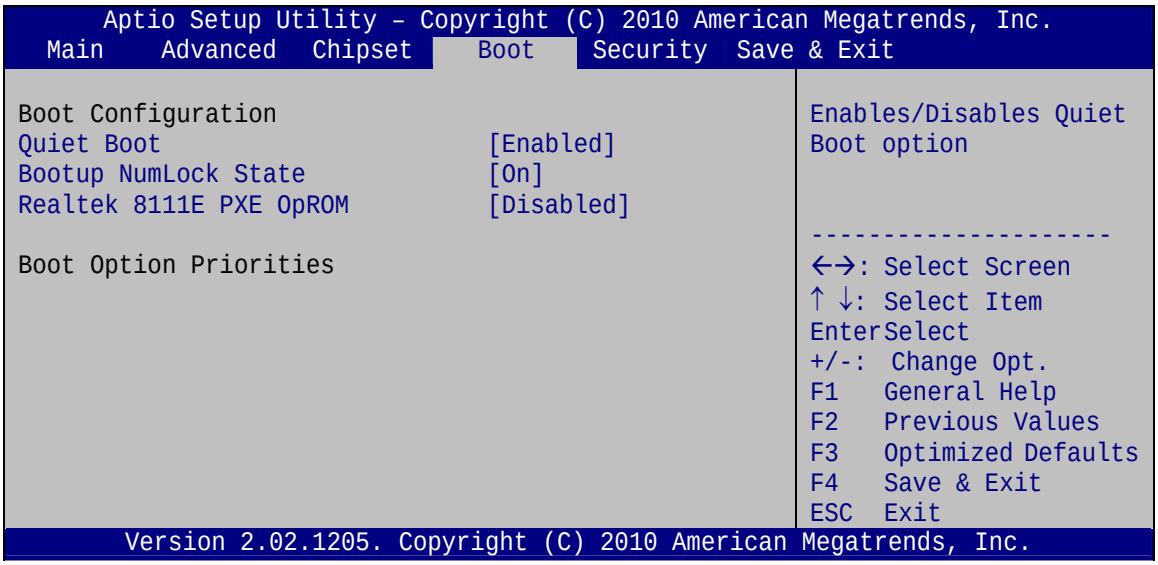
- Select by Panel ID **DEFAULT**
- 800x600 18bit
- 1024x768 18bit
- 1024x768 24bit
- 1280x800 18bit
- 1280x1024 48bit
- 1366x768 18bit
- 1400x1050 48bit
- 1440x900 48bit
- 1600x900 48bit
- 1600x1200 48bit
- 1680x1050 48bit
- 1920x1080 48bit
- 1920x1200 48bit
- 2048x1536 48bit

➔ **Panel ID Resolution**

Displays the panel resolution detected by the BIOS.

5.5 Boot

Use the **Boot** menu (**BIOS Menu 16**) to configure system boot options.



BIOS Menu 16: Boot

➔ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**		Normal POST messages displayed
➔ **Enabled**	**DEFAULT**	OEM Logo displayed instead of POST messages

➔ **Bootup NumLock [On]**

Use the **Bootup NumLock** BIOS option to specify if the number lock setting must be modified during boot up.

➔ **Off**	Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **Realtek 8111E PXE OpROM [Disabled]**

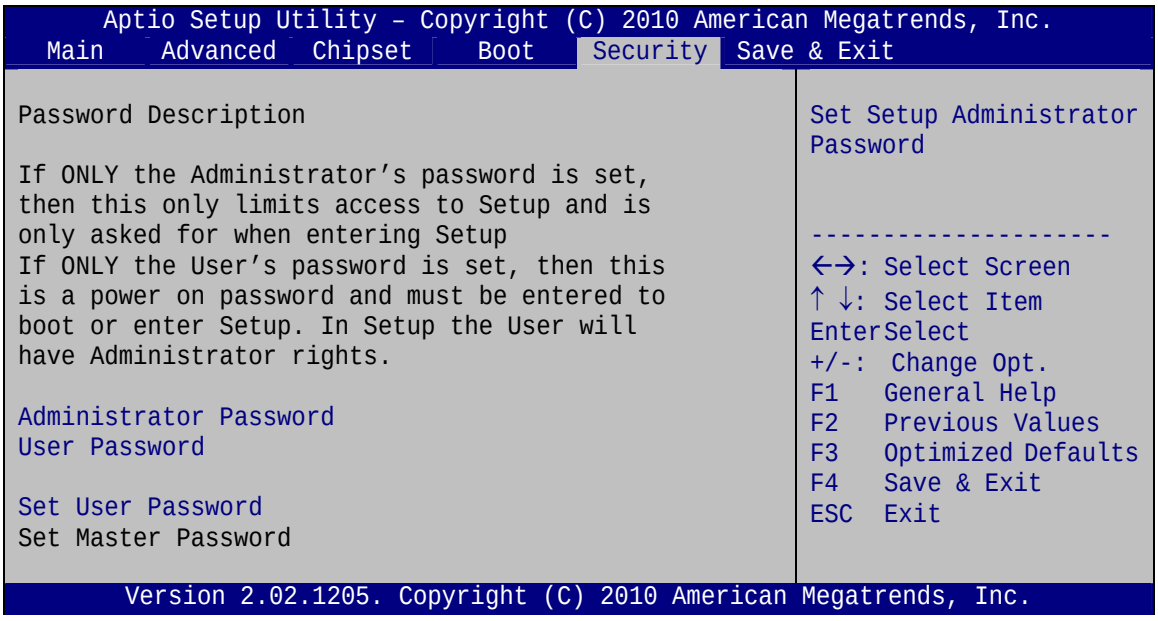
Use the **Realtek 8111E PXE OpROM** option to enable the Realtek 8111E PCIe GbE controller to boot the system.

➔ **Disabled** **DEFAULT** Cannot be booted from a remote system through the Realtek 8111E PCIe GbE controller

➔ **Enabled** Can be booted from a remote system through the Realtek 8111E PCIe GbE controller

5.6 Security

Use the **Security** menu (**BIOS Menu 17**) to set system and user passwords.



BIOS Menu 17: Security

➔ **Administrator Password**

Use the **Administrator Password** to set or change an administrator password.

➔ **User Password**

Use the **User Password** to set or change a user password.

➔ **Set User Password**

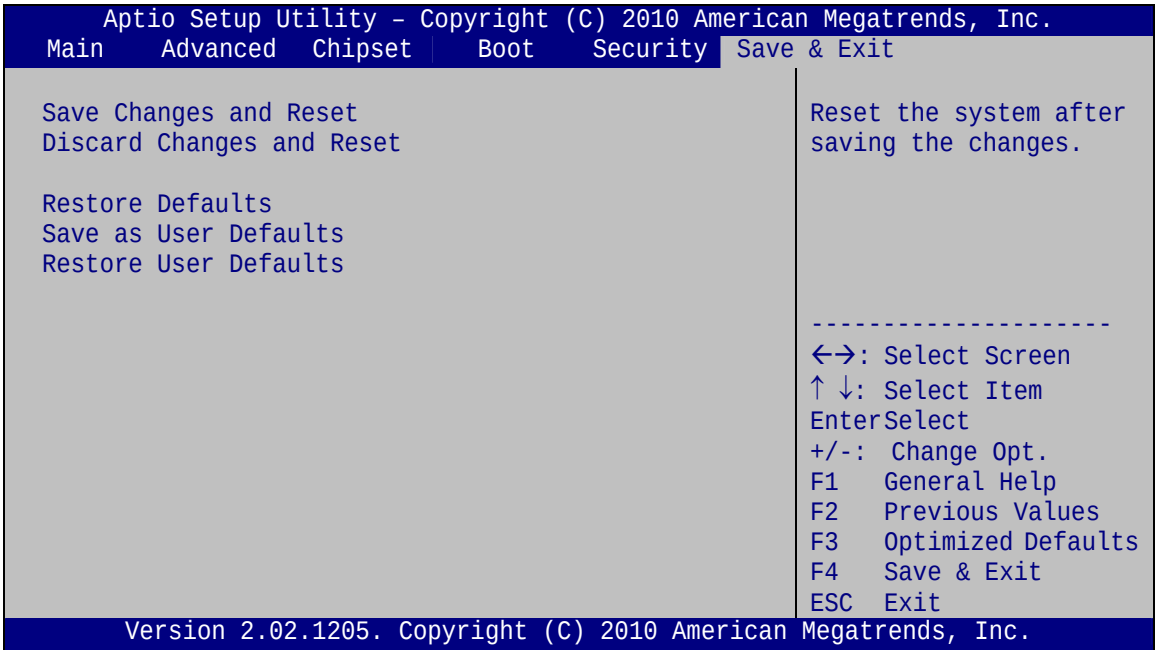
Use the **Set User Password** to set the HDD User Password.

NOTE:

It is recommended to reboot the system after setting the HDD password.

5.7 Exit

Use the **Exit** menu (**BIOS Menu 18**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 18:Exit

➔ **Save Changes and Reset**

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

➔ **Discard Changes and Reset**

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

➔ **Restore Defaults**

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

➔ **Save as User Defaults**

Use the **Save as User Defaults** option to save the changes done so far as user defaults.

➔ **Restore User Defaults**

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.

Appendix

A

BIOS Menu Options

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Appendix

B

One Key Recovery

B.1 One Key Recovery Introduction

The IEI one key recovery is an easy-to-use front end for the Norton Ghost system backup and recovery tool. The one key recovery provides quick and easy shortcuts for creating a backup and reverting to that backup or for reverting to the factory default settings.

The IEI One Key Recovery tool menu is shown below.

Figure B-1: IEI One Key Recovery Tool Menu

Prior to using the IEI One Key Recovery tool (as shown in **Figure B-1**) to backup or restore Windows system, five setup procedures are required.

1. Hardware and BIOS setup (see **Section B.2.1**)
2. Create partitions (see **Section B.2.2**)
3. Install operating system, drivers and system applications (see **Section B.2.3**)
4. Build-up recovery partition (see **Section B.2.4**)
5. Create factory default image (see **Section B.2.5**)

After completing the five initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. The detailed information of each function is described in **Section B.4**.

NOTE:

The initial setup procedures for Linux system are described in **Section B.3**.

NOTE:

Specialized tools are required to change the partition size if the operating system is already installed.

B.1.1 System Requirement

NOTE:

The recovery CD can only be used with IEI products. The software will fail to run and a warning message will appear when used on non-IEI hardware.

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

The partition created for recovery images must be big enough to contain both the factory default image and the user backup image. The size must be calculated before creating the partitions. Please take the following table as a reference when calculating the size of the partition.

	OS	OS Image after Ghost	Compression Ratio
Windows® 7	7 GB	5 GB	70%
Windows® XPE	776 MB	560 MB	70%
Windows® CE 6.0	36 MB	28 MB	77%

NOTE:

Specialized tools are required to change the partition size if the operating system is already installed.

B.1.2 Supported Operating System

The recovery CD is compatible with both Microsoft Windows and Linux operating system (OS). The supported OS versions are listed below.

- Microsoft Windows
  - Windows XP (Service Pack 2 or 3 required)
  - Windows Vista
  - Windows 7
  - Windows CE 5.0
  - Windows CE 6.0
  - Windows XP Embedded
- Linux
  - Fedora Core 12 (Constantine)
  - Fedora Core 11 (Leonidas)
  - Fedora Core 10 (Cambridge)
  - Fedora Core 8 (Werewolf)
  - Fedora Core 7 (Moonshine)
  - RedHat RHEL-5.4
  - RedHat 9 (Ghirke)
  - Ubuntu 8.10 (Intrepid)
  - Ubuntu 7.10 (Gutsy)
  - Ubuntu 6.10 (Edgy)
  - Debian 5.0 (Lenny)
  - Debian 4.0 (Etch)

- SuSe 11.2
- SuSe 11.3

NOTE:

Installing unsupported OS versions may cause the recovery tool to fail.

B.2 Setup Procedure for Windows

Prior to using the recovery tool to backup or restore system, a few setup procedures are required.

Step 1: Hardware and BIOS setup

Step 2: Create partitions

Step 3: Install operating system, drivers and system applications.

Step 4: Build-up recovery partition

Step 5: Create factory default image

The detailed descriptions are described in the following sections.

NOTE:

The setup procedures described below are for Microsoft Windows operating system users. For Linux system, most setup procedures are the same with Microsoft Windows except for several steps which are described in **Section B.3**.

B.2.1 Hardware and BIOS Setup

Step 1: Make sure the system is powered off and unplugged.

Step 2: Install a hard driver or SSD in the KINO-HM551. An unformatted and unpartitioned disk is recommended.

Step 3: Connect an optical disk drive to the KINO-HM551 and insert the recovery CD.

Step 4: Turn on the system.

Step 5: Press the <**DELETE**> key as soon as the system is turned on to enter the BIOS.

Step 6: Select the connected optical disk drive as the 1st boot device. (**Boot → Boot Device Priority → 1st Boot Device**).

Step 7: Save changes and restart the computer. Continue to the next section for instructions on partitioning the internal storage.

B.2.2 Create Partitions

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

Step 1: Put the recovery CD in the optical drive of the system.

Step 2: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

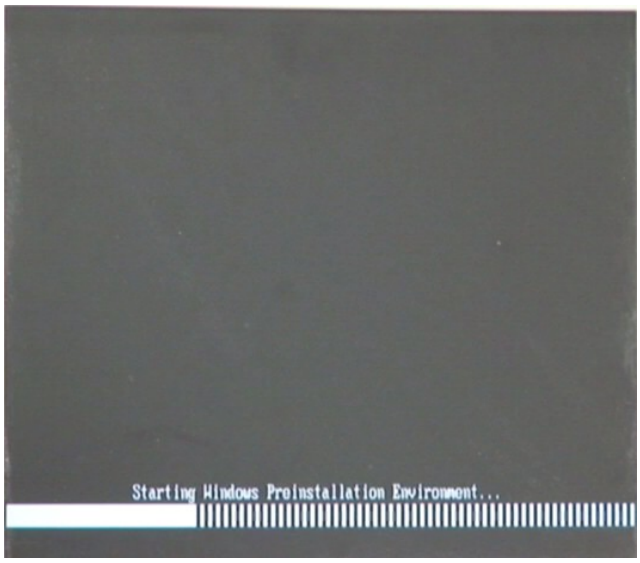


Figure B-2: Launching the Recovery Tool

Step 3: The recovery tool setup menu is shown as below.

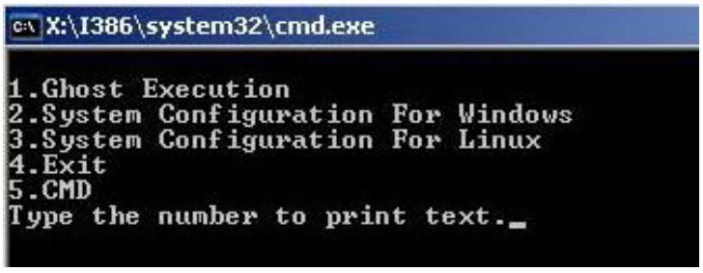


Figure B-3: Recovery Tool Setup Menu

Step 4: Press <**5**> then <Enter>.

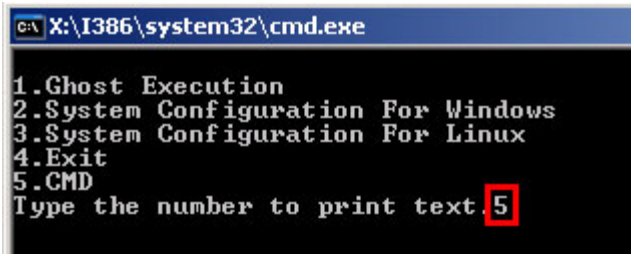


Figure B-4: Command Mode

Step 5: The command prompt window appears. Type the following commands (marked in red) to create two partitions. One is for the OS installation; the other is for saving recovery files and images which will be an invisible partition.

(Press <Enter> after entering each line below)

system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ___

DISKPART>assign letter=N

DISKPART>create part pri size= ___

DISKPART>assign letter=F

DISKPART>exit

system32>format N: /fs:ntfs /q /y

system32>format F: /fs:ntfs /q /v:Recovery /y

system32>exit

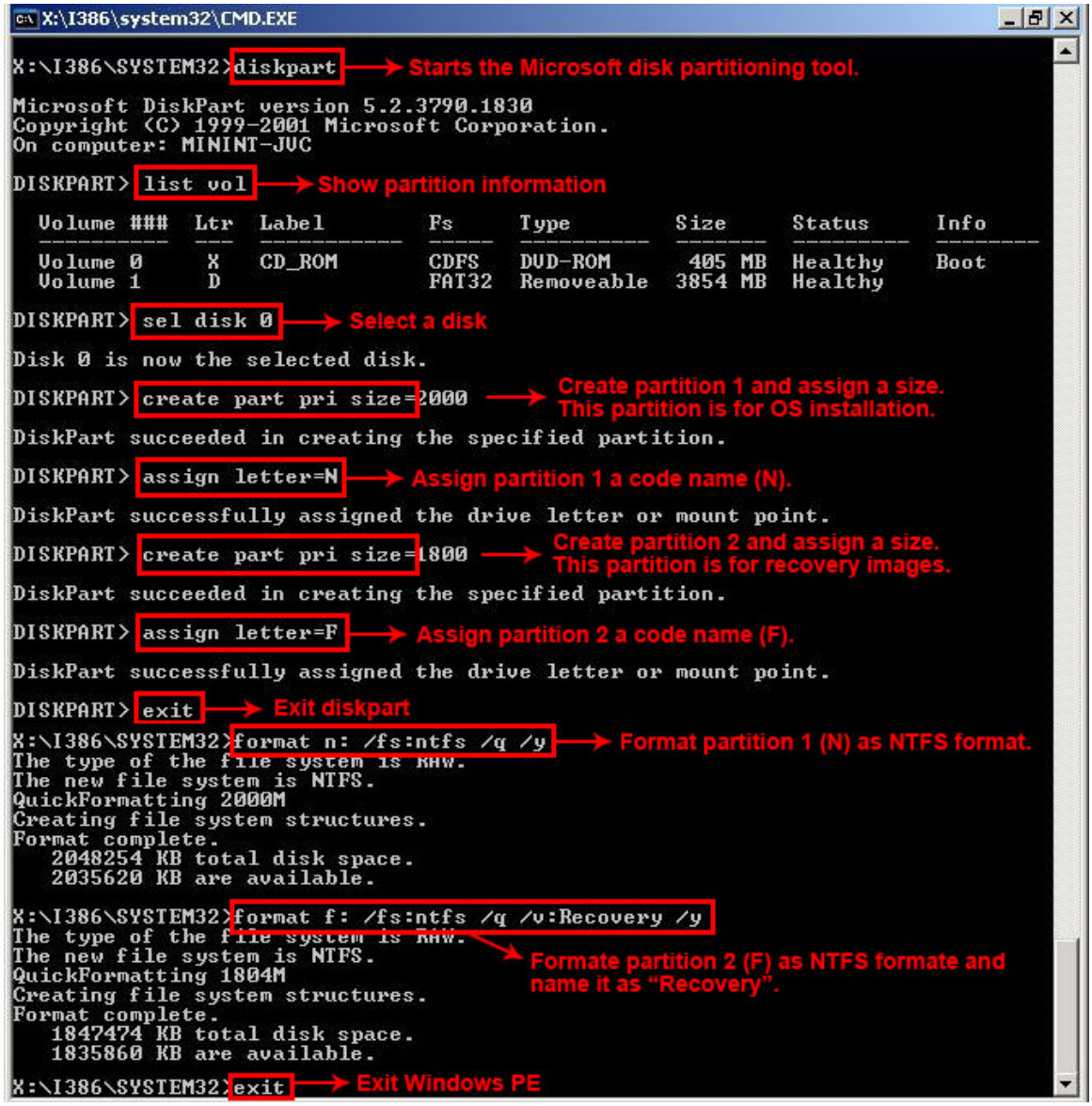
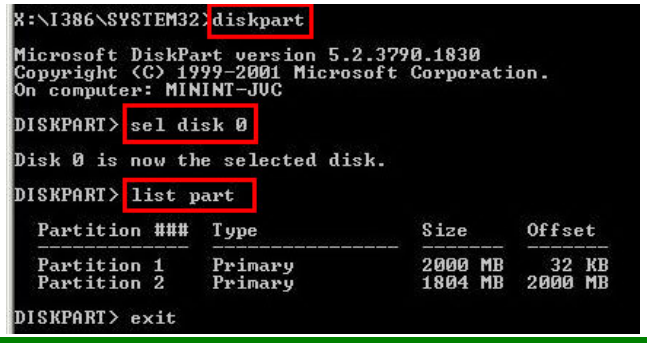


Figure B-5: Partition Creation Commands

NOTE:

Use the following commands to check if the partitions were created successfully.



Step 6: Press any key to exit the recovery tool and automatically reboot the system.

Please continue to the following procedure: Build-up Recovery Partition.

B.2.3 Install Operating System, Drivers and Applications

Install the operating system onto the unlabelled partition. The partition labeled as "Recovery" is for use by the system recovery tool and should not be used for installing the operating system or any applications.

NOTE:

The operating system installation program may offer to reformat the chosen partition. DO NOT format the partition again. The partition has already been formatted and is ready for installing the new operating system.

To install the operating system, insert the operating system installation CD into the optical drive. Restart the computer and follow the installation instructions.

B.2.4 Build-up Recovery Partition

Step 1: Put the recover CD in the optical drive.

Step 2: Start the system.

Step 3: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

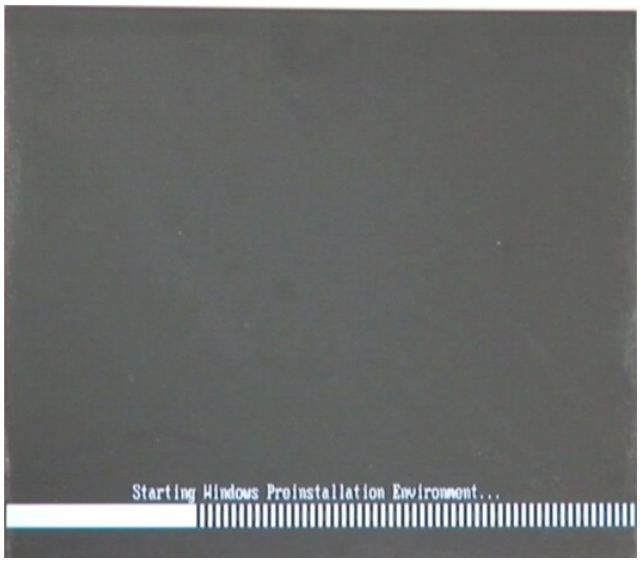


Figure B-6: Launching the Recovery Tool

Step 4: When the recovery tool setup menu appears, press <**2**> then <Enter>.

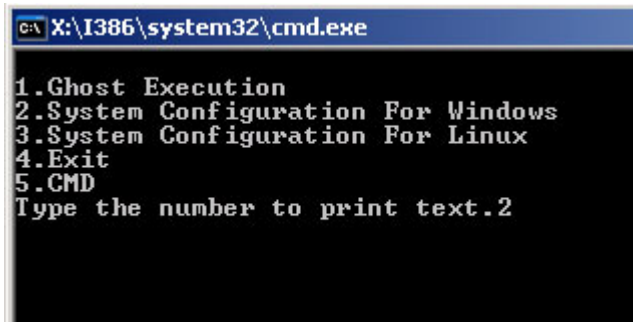


Figure B-7: System Configuration for Windows

Step 5: The Symantec Ghost window appears and starts configuring the system to build-up a recovery partition. In this process, the partition which is created for recovery files in **Section B.2.2** is hidden and the recovery tool is saved in this partition.

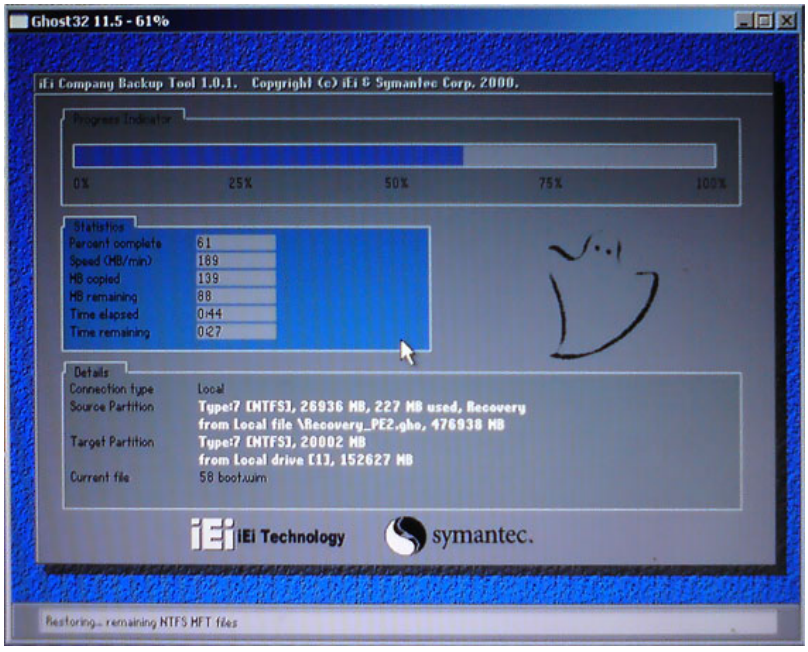


Figure B-8: Build-up Recovery Partition

Step 6: After completing the system configuration, press any key in the following window to reboot the system.

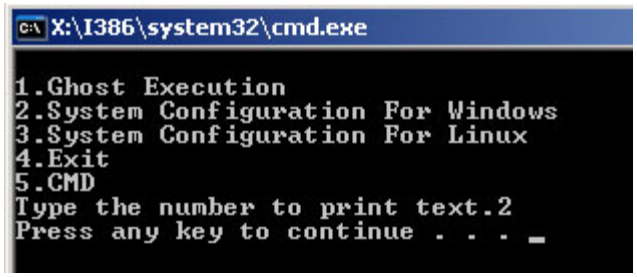


Figure B-9: Press any key to continue

Step 7: Eject the recovery CD.

B.2.5 Create Factory Default Image

NOTE:

Before creating the factory default image, please configure the system to a factory default environment, including driver and application installations.

To create a factory default image, please follow the steps below.

Step 1: Turn on the system. When the following screen displays (**Figure B-10**), press the <**F3**> key to access the recovery tool. The message will display for 10 seconds, please press F3 before the system boots into the operating system.

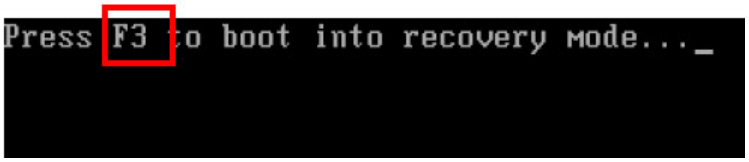


Figure B-10: Press F3 to Boot into Recovery Mode

Step 2: The recovery tool menu appears. Type <**4**> and press <**Enter**>. (**Figure B-11)**

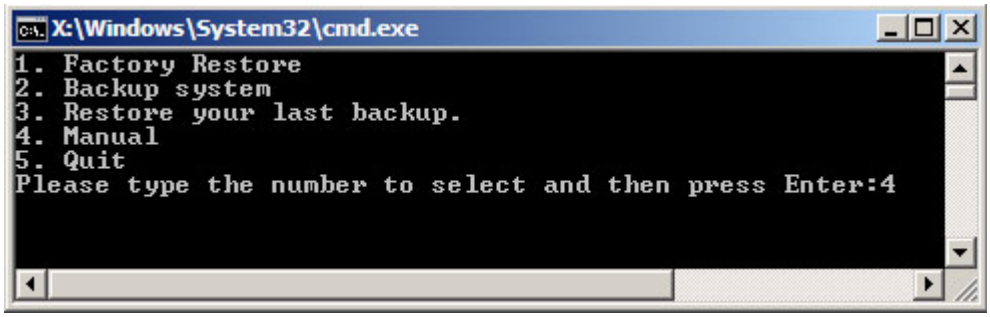


Figure B-11: Recovery Tool Menu

Step 3: The About Symantec Ghost window appears. Click **OK** button to continue.

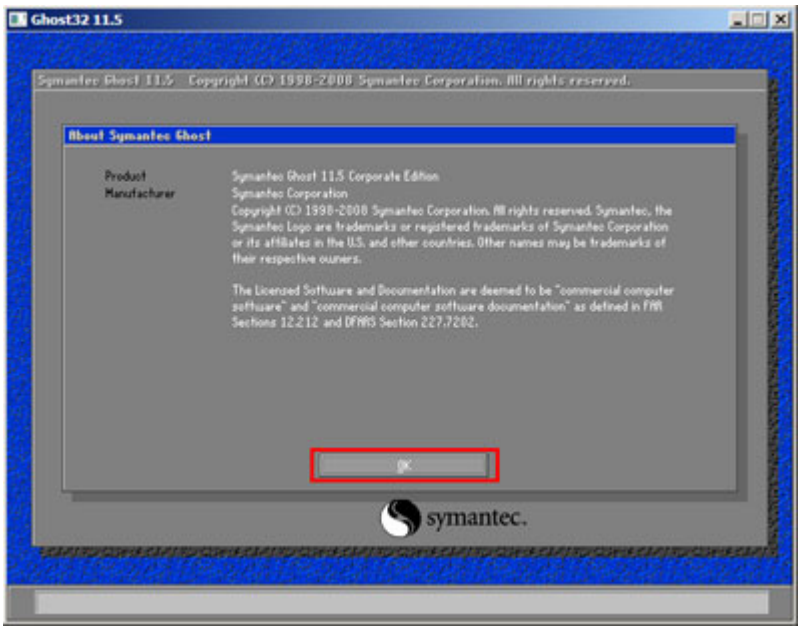


Figure B-12: About Symantec Ghost Window

Step 4: Use mouse to navigate to the option shown below (**Figure B-13**).

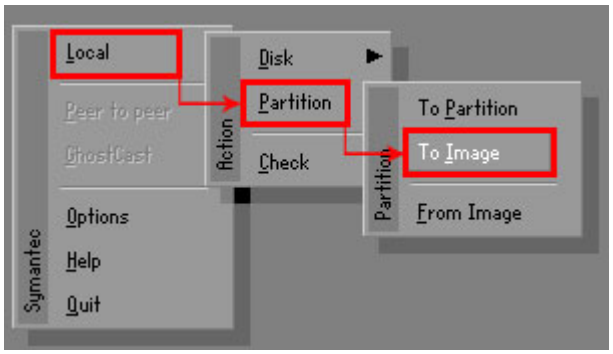


Figure B-13: Symantec Ghost Path

Step 5: Select the local source drive (Drive 1) as shown in **Figure B-14**. Then click OK.

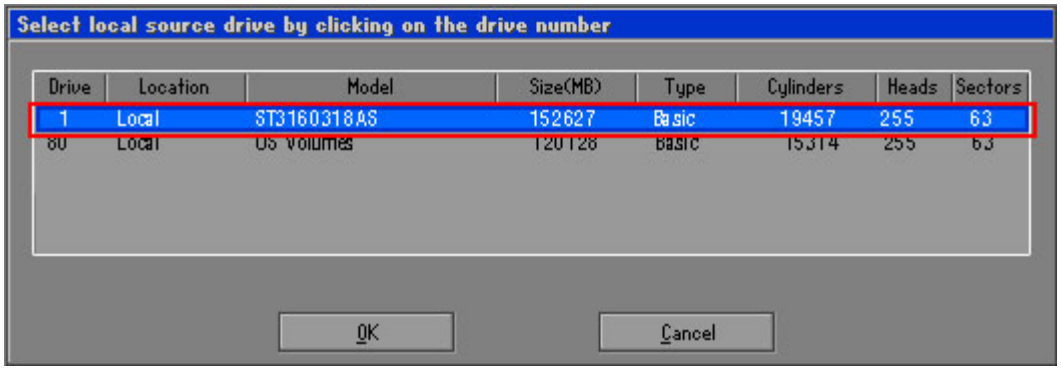


Figure B-14: Select a Local Source Drive

Step 6: Select a source partition (Part 1) from basic drive as shown in **Figure B-15**. Then click OK.

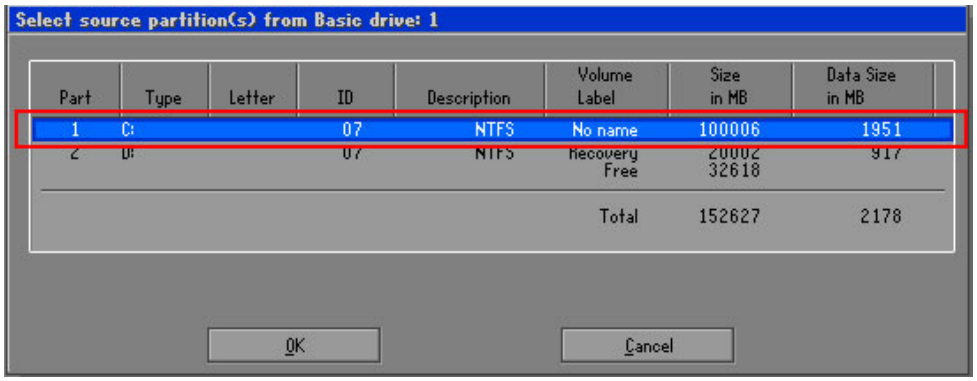


Figure B-15: Select a Source Partition from Basic Drive

Step 7: Select **1.2: [Recovery] NTFS drive** and enter a file name called **iei** (**Figure B-16**). Click **Save**. The factory default image will then be saved in the selected recovery drive and named IEI.GHO.

WARNING:

The file name of the factory default image must be **iei.GHO**.

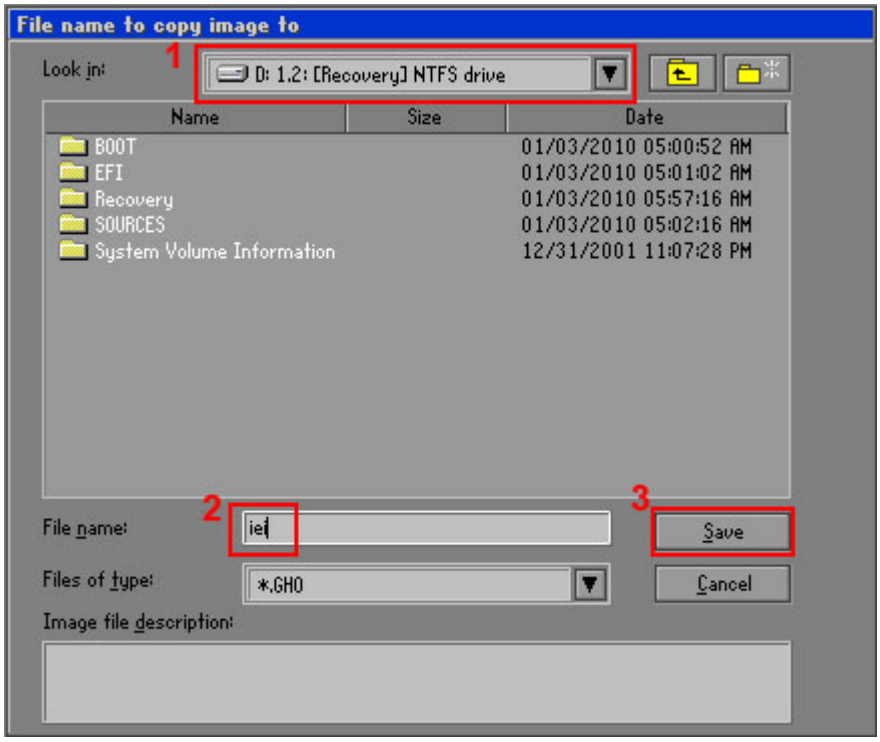


Figure B-16: File Name to Copy Image to

Step 8: When the Compress Image screen in **Figure B-17** prompts, click **High** to make the image file smaller.

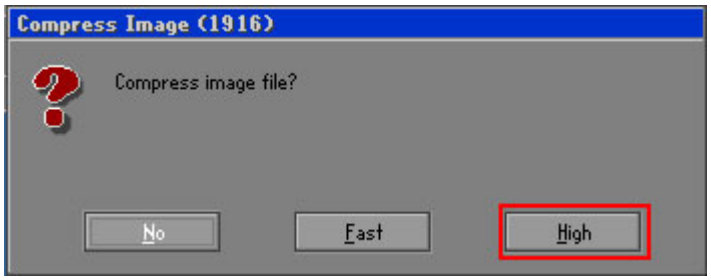


Figure B-17: Compress Image

Step 9: The Proceed with partition image creation window appears, click **Yes** to continue.

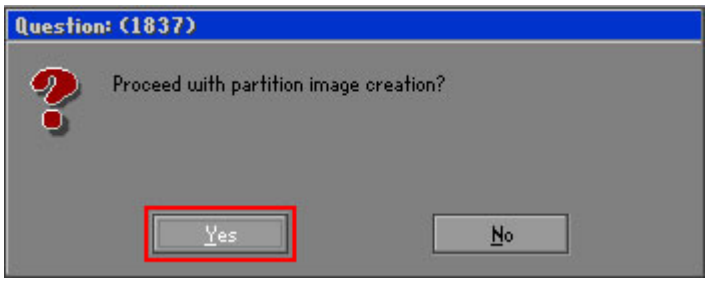


Figure B-18: Image Creation Confirmation

Step 10: The Symantec Ghost starts to create the factory default image (**Figure B-19**).

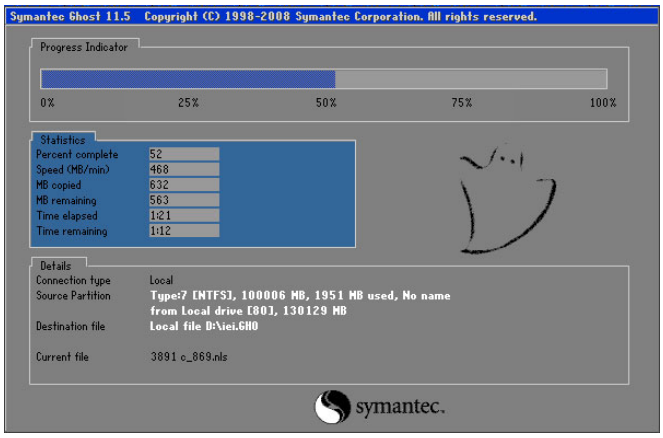


Figure B-19: Image Creation Complete

Step 11: When the image creation completes, a screen prompts as shown in **Figure B-20**. Click **Continue** and close the Ghost window to exit the program.

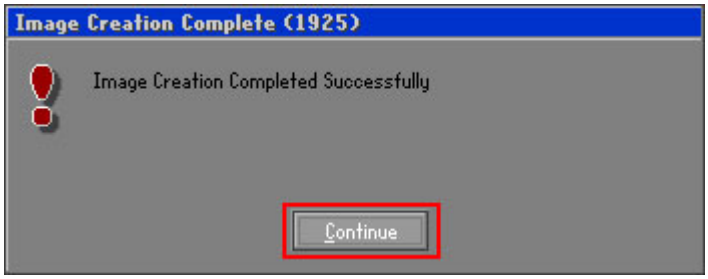


Figure B-20: Image Creation Complete

Step 12: The recovery tool main menu window is shown as below. Press any key to reboot the system.

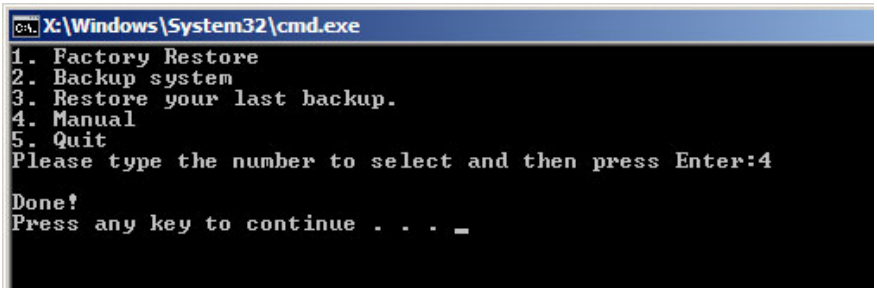


Figure B-21: Press Any Key to Continue

B.3 Setup Procedure for Linux

The initial setup procedures for Linux system are mostly the same with the procedure for Microsoft Windows. Please follow the steps below to setup recovery tool for Linux OS.

Step 1: **Hardware and BIOS setup**. Refer to **Section B.2.1**.

Step 2: **Install Linux operating system**. Make sure to install GRUB (v0.97 or earlier) MBR type and Ext3 partition type. Leave enough space on the hard drive to create the recover partition later.

NOTE:

If the Linux OS is not installed with GRUB (v0.97 or earlier) and Ext3, the Symantec Ghost may not function properly.

While installing Linux OS, please create two partitions:

- Partition 1: ***/***
- Partition 2: **SWAP**

NOTE:

Please reserve enough space for partition 3 for saving recovery images.

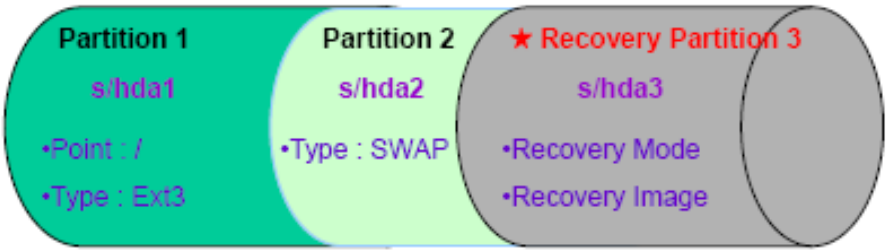


Figure B-22: Partitions for Linux

Step 3: **Create a recovery partition**. Insert the recovery CD into the optical disk drive. Follow **Step 1** ~ **Step 3** described in **Section B.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.

system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ___

DISKPART>assign letter=N

DISKPART>exit

system32>format N: /fs:ntfs /q /v:Recovery /y

system32>exit

Step 4: **Build-up recovery partition**. Press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient. When the recovery tool setup menu appears, type <**3**> and press <Enter> (**Figure B-23**). The Symantec Ghost window appears and starts configuring the system to build-up a recovery partition. After completing the system configuration, press any key to reboot the system. Eject the recovery CD.

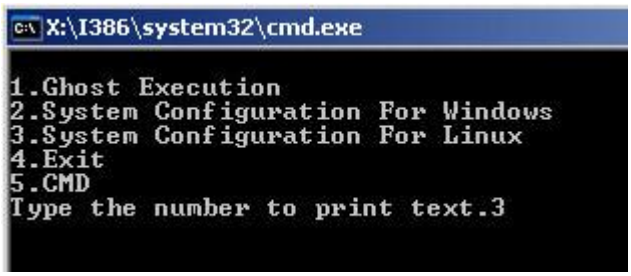


Figure B-23: System Configuration for Linux

Step 5: **Access the recovery tool main menu by modifying the "menu.lst"**. To first access the recovery tool main menu, the menu.lst must be modified. In Linux system, enter Administrator (root). When prompt appears, type:

cd /boot/grub

vi menu.lst

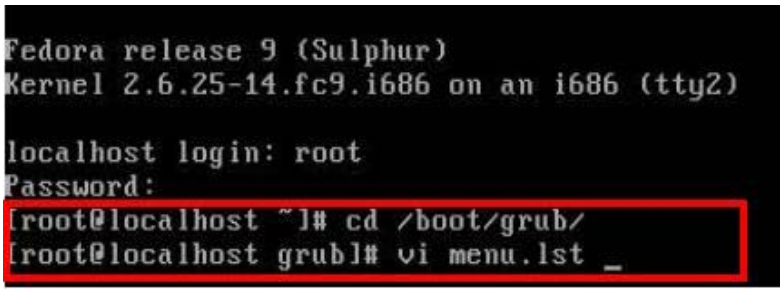
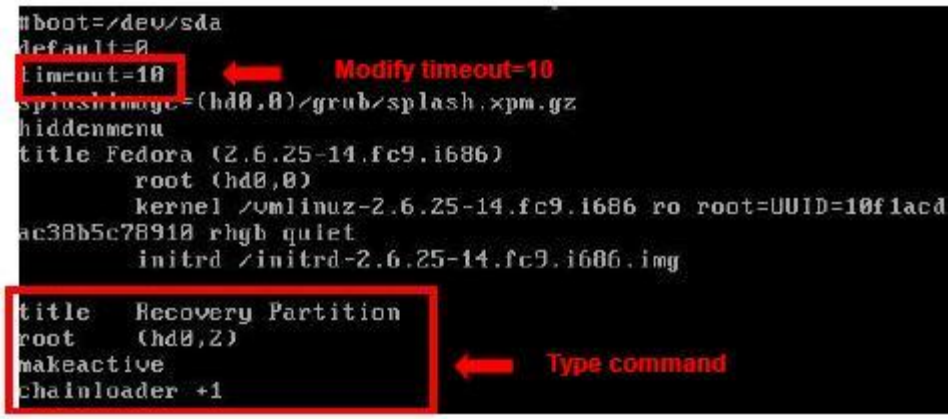


Figure B-24: Access menu.lst in Linux (Text Mode)

Step 6: Modify the menu.lst as shown below.



- Type command:

  title Recovery Partition

  root (hd0,2)

  makeactive

  chainloader +1

Step 7: The recovery tool menu appears. (**Figure B-25**)

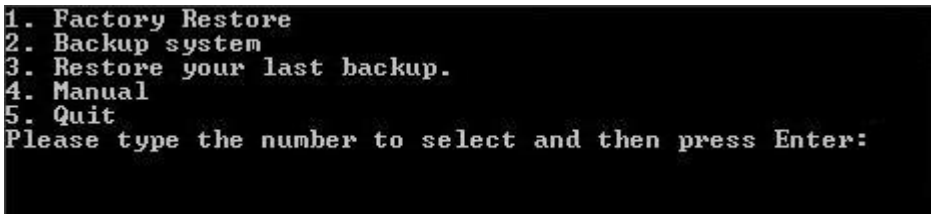


Figure B-25: Recovery Tool Menu

Step 8: **Create a factory default image**. Follow **Step 2** ~ **Step 12** described in **Section B.2.5** to create a factory default image.

B.4 Recovery Tool Functions

After completing the initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. The main menu of the recovery tool is shown below.

Figure B-26: Recovery Tool Main Menu

The recovery tool has several functions including:

1. Factory Restore: Restore the factory default image (iei.GHO) created in Section B.2.5.
2. **Backup system**: Create a system backup image (iei_user.GHO) which will be saved in the hidden partition.
3. **Restore your last backup**: Restore the last system backup image
4. **Manual**: Enter the Symantec Ghost window to configure manually.
5. **Quit**: Exit the recovery tool and restart the system.

WARNING:

Please do not turn off the system power during the process of system recovery or backup.

WARNING:

All data in the system will be deleted during the system recovery. Please backup the system files before restoring the system (either Factory Restore or Restore Backup).

B.4.1 Factory Restore

To restore the factory default image, please follow the steps below.

Step 1: Type <**1**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the factory default. A factory default image called **iei.GHO** is created in the hidden Recovery partition.

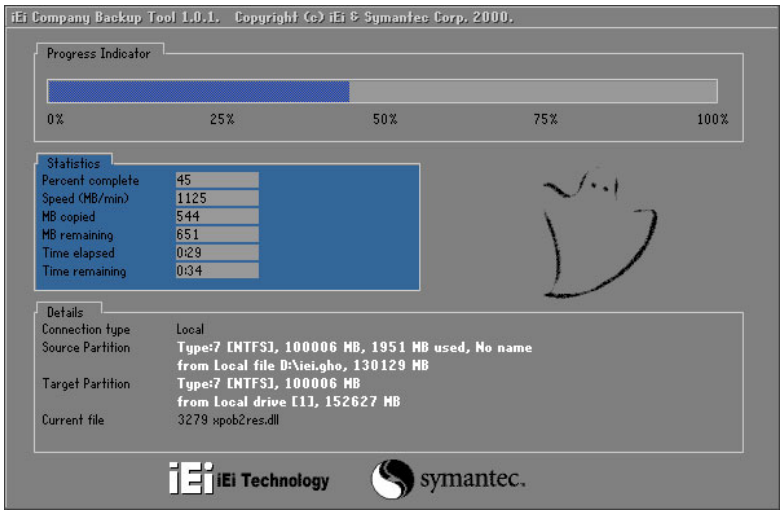


Figure B-27: Restore Factory Default

Step 3: The screen is shown as in **Figure B-28** when completed. Press any key to reboot the system.

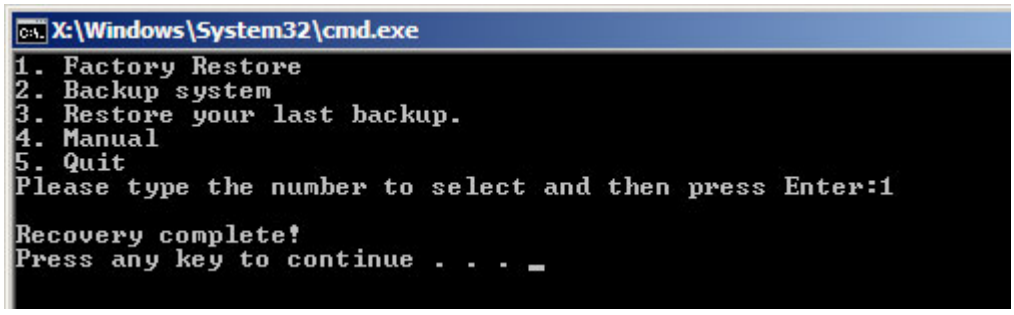


Figure B-28: Recovery Complete Window

B.4.2 Backup System

To backup the system, please follow the steps below.

Step 1: Type <**2**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to backup the system. A backup image called **iei_user.GHO** is created in the hidden Recovery partition.

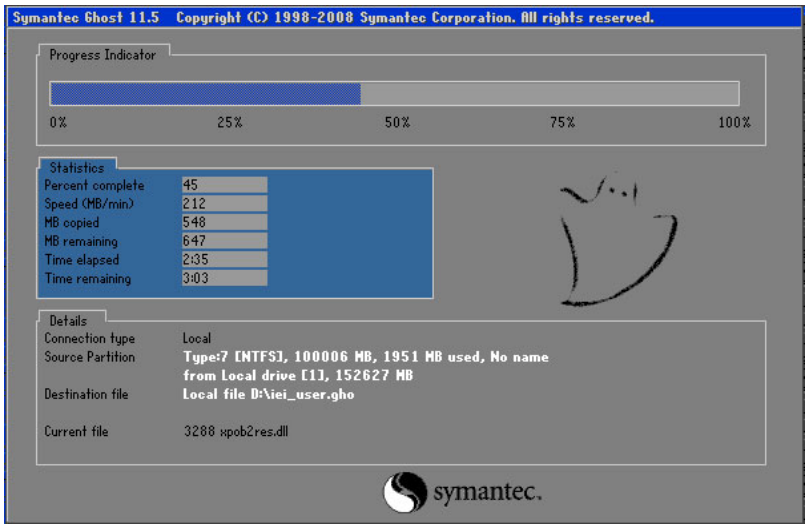


Figure B-29: Backup System

Step 3: The screen is shown as in **Figure B-30** when system backup is completed. Press any key to reboot the system.

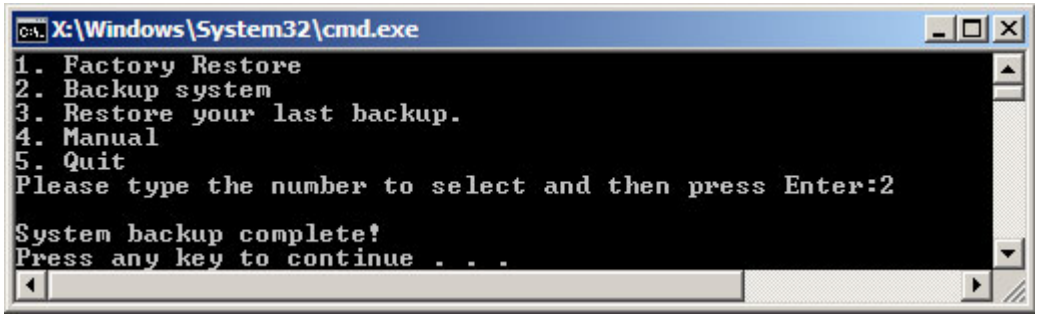


Figure B-30: System Backup Complete Window

B.4.3 Restore Your Last Backup

To restore the last system backup, please follow the steps below.

Step 1: Type <**3**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the last backup image (iei_user.GHO).

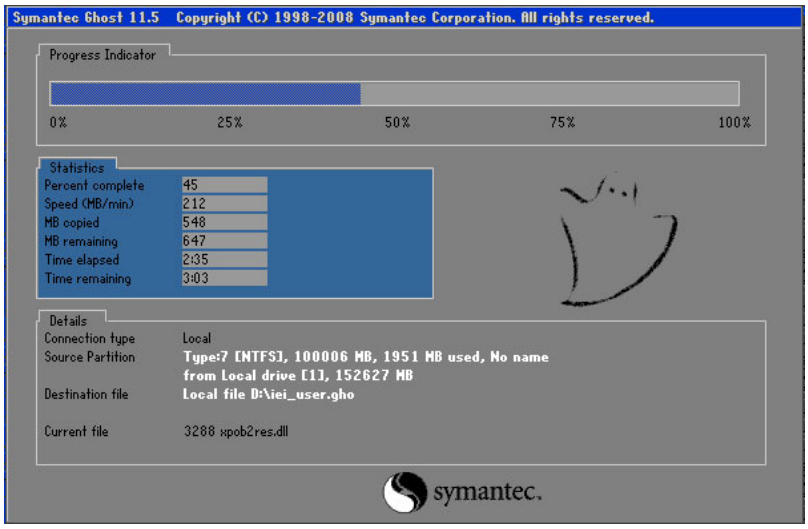


Figure B-31: Restore Backup

Step 3: The screen is shown as in **Figure B-30** when backup recovery is completed. Press any key to reboot the system.

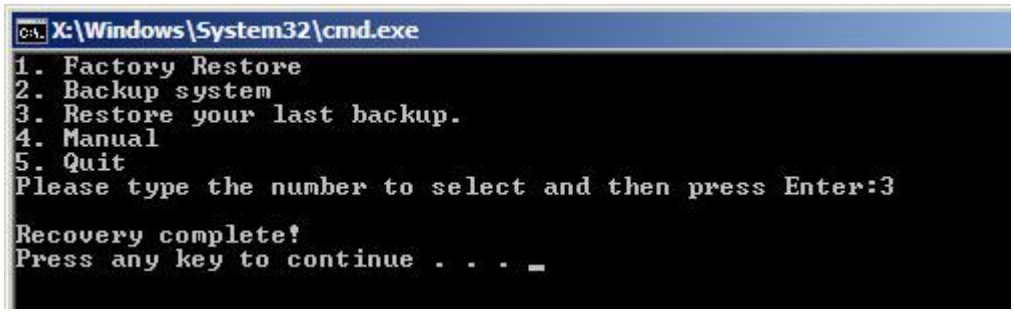


Figure B-32: Restore System Backup Complete Window

B.4.4 Manual

To restore the last system backup, please follow the steps below.

Step 1: Type <**4**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears. Use the Ghost program to backup or recover the system manually.

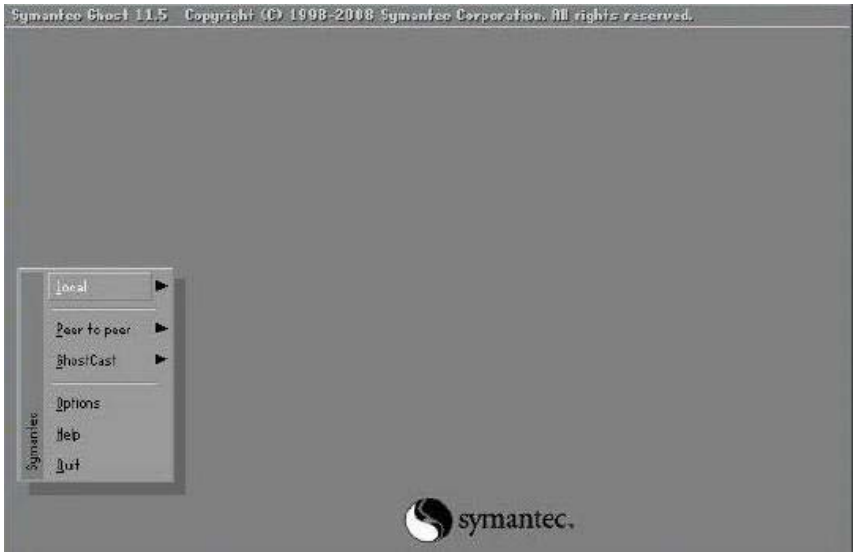


Figure B-33: Symantec Ghost Window

Step 3: When backup or recovery is completed, press any key to reboot the system.

B.5 Other Information

B.5.1 Using AHCI Mode or ALi M5283 / VIA VT6421A Controller

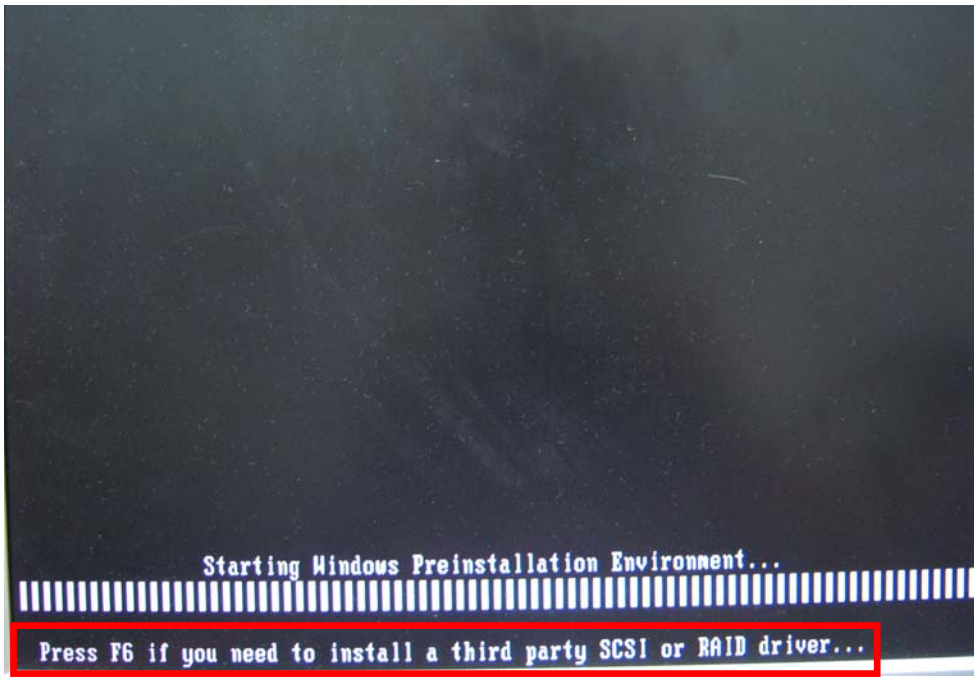
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

Step 4: Copy the SATA RAID/AHCI driver to a floppy disk and insert the floppy disk into a USB floppy disk drive. The SATA RAID/AHCI driver must be especially designed for the on-board SATA controller.

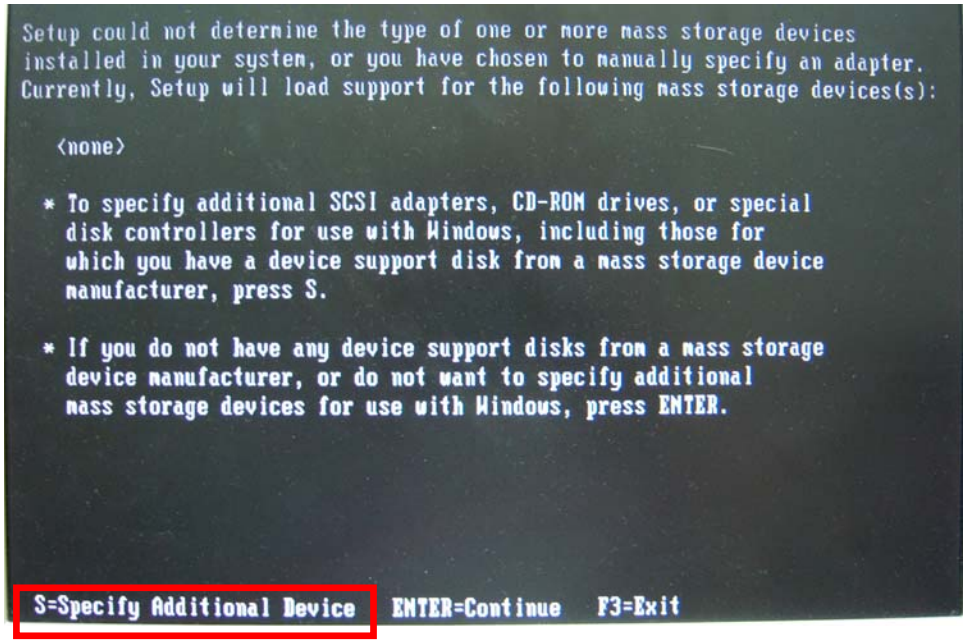
Step 5: Connect the USB floppy disk drive to the system.

Step 6: Insert the One Key Recovery CD into the system and boot the system from the CD.

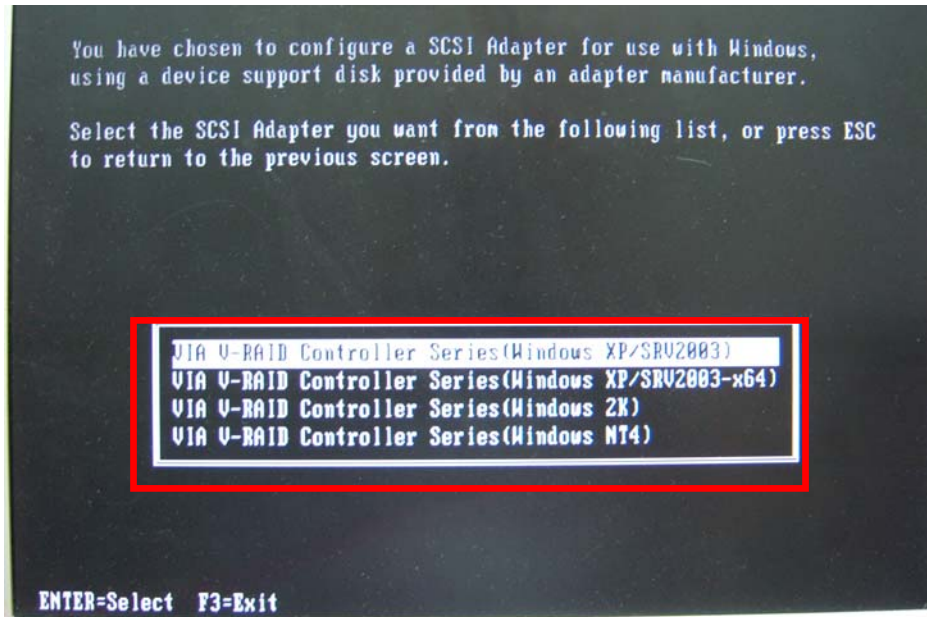
Step 7: When launching the recovery tool, press <**F6**>.



Step 8: When the following window appears, press <**S**> to select “Specify Additional Device”.



Step 9: In the following window, select a SATA controller mode used in the system. Then press <**Enter**>. The user can now start using the SATA HDD.



Step 10: After pressing <Enter>, the system will get into the recovery tool setup menu. Continue to follow the setup procedure from **Step 4** in **Section B.2.2 Create Partitions** to finish the whole setup process.

B.5.2 System Memory Requirement

To be able to access the recovery tool by pressing <**F3**> while booting up the system, please make sure to have enough system memory. The minimum memory requirement is listed below.

- **Using Award BIOS**: 128 MB system memory
- **Using AMI BIOS**: 512 MB system memory.

Appendix

C

Terminology

AC ’97	Audio Codec 97 (AC’97) refers to a codec standard developed by Intel® in 1997.
ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
APM	The Advanced Power Management (APM) application program interface (API) enables the inclusion of power management in the BIOS.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
ASKIR	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude (“volume”) of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
BIOS	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CMOS	Complimentary metal-oxide-conductor is a type of integrated circuit used in chips like static RAM and microprocessors.
COM	COM is used to refer to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal

	computer is usually a male DE-9 connector.
DAC	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
DDR	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.
DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.
DIMM	Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
GbE	Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.
GPIO	General purpose input
IrDA	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
L1 Cache	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.
L2 Cache	The Level 2 Cache (L2 Cache) is an external processor memory cache.
LVDS	Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.
MAC	The Media Access Control (MAC) protocol enables several terminals or network nodes to communicate in a LAN, or other multipoint networks.

PCIe	PCI Express (PCIe) is a communications bus that uses dual data lines for full-duplex (two-way) serial (point-to-point) communications between the SBC components and/or expansion cards and the SBC chipsets. Each line has a 2.5 Gbps data transmission rate and a 250 MBps sustained data transfer rate.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
QVGA	Quarter Video Graphics Array (QVGA) refers to a display with a resolution of 320 x 240 pixels.
RAM	Random Access Memory (RAM) is a form of storage used in computer. RAM is volatile memory, so it loses its data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
SATA	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA 3Gb/s bus has data transfer speeds of up to 3.0 Gbps.
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
UART	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.
UHCI	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
USB	The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates, while

	USB 2.0 supports 480Mbps data transfer rates.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

D

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30H             ;time-out value is 48 seconds
        INT      15H
 ;
; ADD THE APPLICATION PROGRAM HERE
;
        CMP      EXIT_AP, 1         ;is the application over?
        JNE      W_LOOP     ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT      15H
;
; EXIT ;
```

Appendix

E

Hazardous Materials Disclosure

E.1 Hazardous Material Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。